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July 22, 2022

VIA CERTIFIED MAIL
RETURN RECIEPT REQUESTED & EMAIL

Mr. Tony Hobson
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Mr. Tony Hobson
Vice President of Manufacturing
New-Indy Containerboard, LLC
3500 Porsche Way, Suite 150
Ontario, California 91764
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Re: 60 Day-Notice of Intent to File Suit for Clean Air Act Violations at the pulp and paper mill owned by New-Indy Catawba, LLC and New-Indy Containerboard, LLC, in Catawba, York County, South Carolina.

Dear Mr. Hobson:

Pursuant to the Clean Air Act ("CAA"), 42 U.S.C. § 7604(b), this letter serves as notice that Benjamin Butler, Cheryll Riley Clapper, Angela Collins, Charles H. Howard, Karen Kasper, Joel Parris, and Jennifer Tsonas ("Citizens") intend to sue New-Indy Catawba, LLC d/b/a/ New-Indy Containerboard ("NI Catawba"), and New-Indy Containerboard, LLC, ("NI Containerboard") (collectively, "New-Indy") located at 5300 Cureton Ferry Road, Catawba, South Carolina for violations of an emission limit or standard imposed by the CAA. Specifically, New-Indy violated the emission limits imposed by the United States Environmental Protection Agency ("EPA") in a May 13, 2021 Emergency Order ("EPA Order").

GENERAL ALLEGATIONS

I. The Facility

New-Indy owns and operates a pulp and paper mill in Catawba, South Carolina (the "Facility"). New-Indy shut down the Facility's manufacturing operations between September and

November of 2020, to convert from producing white paper (bleached paper) to producing containerboard grade paper (unbleached brown paper referred to as linerboard used, among other purposes, to make cardboard). As of February of 2021, New-Indy was operating the Facility again, and began emitting high levels of Total Reduced Sulfur ("TRS") and Hydrogen Sulfide ("H_2S").

II. H_2S and TRS

Approximately 1.7 million people live within a 30-mile radius of the Facility, in York, Lancaster, and Chester Counties in South Carolina, and Union and Mecklenburg Counties in North Carolina. The Facility is located approximately 10 miles south and southwest of Indian Land, South Carolina and Waxhaw, North Carolina, respectively. The Catawba Indian Nation Reservation is located less than 4 miles north of the Facility.

Exposure to excessive TRS and H_2S causes various adverse health effects. Acute and chronic exposures can cause irritation of the lining of the eye and respiratory system, leading to shortness of breath, burning of the nose and sinuses, swelling of membranes, impaired oxygen delivery to the blood stream, and fluid accumulation in the lungs. Exposures can cause offensive odors, sleep disturbance and olfaction paralysis and fatigue. Chronic exposure can permanently damage the respiratory system, leading to chronic irritant asthma, rhinitis, sinusitis, impairment in neuropsychological function, cognition, and pulmonary function. In severe exposures, coma, seizures and death can occur. Even at low levels, exposures can exacerbate pre-existing respiratory conditions such as asthma.

Beginning approximately February of 2021, the Facility emitted excessive amounts of H_2S and TRS. EPA and New-Indy have recorded high levels of H_2S concentrations in the air at various locations on and off the Facility property, including in nearby residential communities. New-Indy misrepresented the H_2S emissions that would result from its physical changes and changes in the method of operation, including the proposed re-routing of all of its foul condensate from production to its outside wastewater treatment plant ("WWTP").

In April 2020, New-Indy submitted an application for a "minor" construction permit (the "Application") to the South Carolina Department of Health and Environmental Control ("DHEC") to obtain a construction permit that would allow New-Indy to make a physical change and change its method of operation, including taking its toxic air pollutant steam stripper located within the Facility out of service, and building a hard pipe to transport approximately one million gallons per day ("MGD") of its foul condensate to its outdoor WWTP. This change was to be taken in conjunction with the larger conversion of the Facility to brown paper production. Because New-Indy is an existing major source of air pollutants in an attainment area, the Application purported to demonstrate that the physical changes to the Facility would <u>not</u> result in a net significant increase in any of the pollutants that are regulated under the CAA New Source Review requirements.[1] If the change would result in a net significant increase of any regulated air pollutant, a Prevention of Significant Deterioration ("PSD") permit would have been required. Such a permit imposes many obligations on the applicant, including potential modeling of the ambient impact of the increased emissions and other adverse impacts on the population, and application of Best Available Control Technology ("BACT") to limit the emissions resulting from the change. To justify its avoidance of PSD Permit requirements and to qualify for a "minor" air construction permit, New-Indy represented to DHEC that there would be a net increase of 2.2 tons of H_2S per year ("tpy") above its reported 11.78 tons per year baseline emissions compared to the net significant increase threshold of 10 tpy prescribed by the PSD Regulations, 40 C.F.R. 52.21 (a)(2)(iv)(b)(23). *See* Ex. 1, Application at 4-6 (Table 3).

As part of the analysis, New-Indy represented to DHEC that "the total volume of mill wastewater is … expected to be reduced by approximately 50% following conversion to unbleached pulp production." *See* Ex. 1, Application at 2-1. Upon information and belief, New-Indy assumed this fact as true in estimating future emissions, after installation of the hard pipe and elimination of the steam stripper. Reduction in Facility wastewater would have reduced the volume of toxic components in the wastewater and the toxic emissions volatilizing from the foul condensate.

Contrary to representations to DHEC, the discharge monitoring reports submitted by New-Indy to DHEC show that it did not reduce its wastewater discharge as promised in its Application. In 2019 and 2020, before the conversion, the monthly average discharge rate was 19.7 MGD and 22.2 MGD, respectively. After the conversion, reported by New-Indy to have been completed February 1, 2021, the monthly average discharge rate through June 2021 was 19.4 MGD. *See* Ex. 2, Report of Kenneth L. Norcross at pgs. 9-10 ("Norcross Report"). According to discharge monitoring data submitted by New-Indy, the Facility's wastewater discharge rate has averaged approximately 22.8 MGD between June 2021 and May 2022. As a result, New-Indy's emission calculations relying on reduced wastewater volume and load were false. Making matters worse, on April 7, 2021, New-Indy applied with DHEC to remove the 1825 air dried tons of unbleached pulp per day production limit from its permits. Increased production would only exacerbate the air contamination caused by New-Indy.

New-Indy's application for a minor construction permit also falsely represented the level of removal of toxic air pollutants that would occur when the foul condensate was exclusively piped to its outdoor WWTP, specifically the portion of the plant which was impaired. Specifically, New-Indy's representation was based on its use of a hydrogen sulfide computer model ("H2SSIM") designed to predict air emissions from a WWTP. The H2SSIM model was created by the industry-based National Council for Air and Stream Improvement, Inc. ("NCASI"). The NCASI model was inapplicable to New-Indy's malfunctioning WWTP and doomed to yield significantly understated H_2S emission

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[1] The phrase New Source Review encompasses both Prevention of Significant Deterioration ("PSD") permits applicable in areas that attain the federal health standards and Nonattainment permits in areas that do not.

estimates. NCASI published a technical support document with its model that required a specific set of operating conditions in the WWTP before the model could be used. New-Indy's WWTP operating conditions at the time of making physical changes to the plant failed the requirements of the NCASI Model, thereby giving inaccurate emissions estimates, which New-Indy represented to DHEC.

Dr. Steven Hanna, Citizens' air dispersion modeling expert, has determined using back-calculations and reverse modeling the actual H_2S emissions from New-Indy's facility during the four days in April 2021 that EPA monitored ambient concentrations of H_2S near the Facility. Dr. Hanna used the EPA's Geospatial Monitoring of Air Pollution measurements of H_2S ambient air concentrations taken April 24-27, 2021 about 500 to 1,000 meters north of a WWTP aeration pond, including a reading of a maximum concentration of 1000 parts per billion ("ppb"). Using those measurements with wind data, Dr. Hanna used an integral dispersion screening model to back-calculate the emissions rate that would have produced those observations.

Dr. Hanna has utilized EPA-approved AERMOD to perform a complex analysis and confirmed that New-Indy's emission rates grossly exceeded the PSD permit threshold. Specifically, emissions of H_2S were approximately 15 tons *per day*. New-Indy had represented that its baseline H_2S emissions were 9.7 tons *per year*. In just two days, New-Indy emitted H_2S at rates that would have exceeded the 10 ton per year significant net increase thresholds for H_2S, thereby triggering the need to obtain a PSD permit.

Over the period of February 1, 2021 through the May EPA Order, New-Indy bypassed its undersized steam stripper and hard-piped all of its foul condensate outdoors to its malfunctioning wastewater treatment system, with the result that it blanketed the surrounding residential areas with toxic air pollutants, specifically TRS, which included methyl mercaptan and H_2S. Despite these known failures, New-Indy ran the Facility at production rates that overwhelmed the treatment capacity of a failing WWTP. *See* Ex. 2, Norcross Report During that period, the Facility emitted more than 1000 tons of H_2S into the community. New-Indy has indicated that H_2S is approximately 10% of its emissions of TRS (Ex. 3, CAP at p. 6-12, Table 6-1), meaning that as much as 10,000 tons or more of TRS were being emitted in that timeframe. New-Indy likewise triggered a PSD permit obligation for TRS because the net emissions increase resulting from the change grossly exceeded the threshold of 10 tons per year more than its baseline TRS emissions of 147.2 tons per year.

On the basis of these misrepresentations, New-Indy sought and obtained findings by DHEC that its physical change and change in the method of operation, particularly the deactivation of its steam stripper and reliance on the wastewater treatment system was a "minor" change that did not require a PSD permit. As a result, New-Indy was not required to demonstrate compliance with South Carolina toxic air pollutant regulations governing H2S and methyl mercaptan (a component of TRS). *See* Ex. 1, Application at 4-8; S.C. Code Regs. 61-62.7.

EPA has failed to prosecute this violation of the CAA PSD permit requirements and has failed to require New-Indy to obtain a PSD permit. Moreover, EPA and DHEC have allowed New-Indy to return to its pre-violation status of using its one, undersized air toxics steam stripper that is capable—at best—of controlling only 70% of the Facility's foul condensate at current production capacity, without analyzing what other air pollution controls or limits are required under the CAA. EPA has done so contrary to its own enforcement guidance. Among other requirements, New-Indy should have conducted a BACT analysis to determine best available technologies and appropriate permit emission and/or operational limits for its Facility, particularly including its WWTP. EPA has issued guidance for required injunctive relief for PSD violations. The guidance specifically states that "it is no longer appropriate to merely allow a source to 'correct' an NSR violation by dismantling an illegal modification, unless emissions from the . . . modified unit essentially become zero (e.g., the entire process line was shutdown). Thus, a source generally should not be able merely to return to pre-violation conditions in order to avoid installation of control equipment or implementation of process changes." *Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements*, Nov. 17, 1998. In the absence of EPA's action, contemporaneously with this letter, Citizens have exercised their rights under the Clean Air Act by suing New-Indy in federal court asking that the court require New-Indy to do a BACT analysis and to be subject to appropriate emission limits for H_2S and TRS from fugitive emissions at the WWTP.

III. New-Indy's Violations of Emission Standards and Limitations and an Order Issued by the Administrator.

On May 13, 2021, EPA issued a Clean Air Act Emergency Order ("EPA Order") to New-Indy under the Clean Air Act, 42 U.S.C. § 7603. Paragraph 52 of the EPA Order included a schedule of compliance that imposed specific measures and a timetable on New-Indy that were characterized by EPA as necessary to abate or prevent an imminent or substantial endangerment to the public health or welfare. Among other requirements, New-Indy was required to operate the Facility in such a way as not to exceed ambient concentration limits for H_2S at monitor locations outside its fence line, specifically, 70 ppb on a seven-day rolling average and 600 ppb on a 30-minute rolling average. This schedule of compliance constituted a "standard or limitation" within the meaning of 42 U.S.C. § 7604(f)(1).

New-Indy has violated the requirements of the EPA Order numerous times, including as recently as September 1, 2021, thus endangering the health of the Citizens and persisting in the creation of noxious odors that damaged the welfare of the Citizens.

In addition, the Order required New-Indy, *if it intended to continue manufacturing operations*, to consult with a toxicologist and submit a long-term plan within 45 days indicating how its continued operations would avoid the endangerment to the public health and welfare. On information and belief, New-Indy has not submitted to EPA a long-term plan that includes input from a toxicologist to avoid the ongoing endangerment to the Citizens. Neither EPA's nor DHEC's websites have posted any such endangerment assessment or plan demonstrating New-Indy's consultation with a toxicologist, nor were the Citizens provided it in response to Freedom of Information Act Requests. The continuing release of H_2S/TRS from the Facility and weekly status reports issued by New-Indy and posted on DHEC's website do not indicate that necessary operational, production, or process changes are being implemented at the Facility to comply with generally accepted good engineering and good air pollution control practices. *See* Ex. 2, Norcross Report at pgs. 12-14.

New-Indy exceeded the fence-line concentration limits required by the EPA Order (70 ppb for a seven-day rolling average and 600 ppb for a 30-minute rolling average) on numerous occasions. Specifically, for May and June 2021, New-Indy reported the following exceedances at monitoring station 1:

Paragraph 52.b (70 ppb / 7 days)		**Paragraph 52.b (600 ppb / 30 minutes)**	
Date	**H2S Concentration**	**Date and Time**	**H2S Concentration**
May 26, 2021 – June 1, 2021	70.8 ppb	June 4, 2021, 7:00 - 7:30 pm	1,075 ppb
May 27, 2021 – June 2, 2021	81.2 ppb	June 4, 2021, 7:30 - 8:00 pm	1,329 ppb
May 28, 2021 – June 3, 2021	88.8 ppb	June 4, 2021, 8:00 - 8:30 pm	1,073 ppb
May 29, 2021 – June 4, 2021	110.8 ppb	June 4, 2021, 8:30 - 9:00 pm	607 ppb
May 30, 2021 – June 5, 2021	102.4 ppb	June 12, 2021, 2:30 – 3:00 pm	675.3 ppb
May 31, 2021 – June 6, 2021	71.8 ppb	June 14, 2021, 4:30 – 5:00 pm	1,330 ppb
June 7, 2021 – June 13, 2021	93.7 ppb	June 15, 2021, 2:00 – 2:30 pm	624.6 ppb
June 8, 2021 – June 14, 2021	108.4 ppb	June 15, 2021, 5:00 – 5:30 pm	676.6 ppb
June 9, 2021 – June 15, 2021	150.3 ppb	June 15, 2021, 5:30 – 6:00 pm	674.9 ppb
June 10, 2021 – June 16, 2021	177.7 ppb	June 20, 2021, 4:30 – 5:00 pm	812 ppb
June 11, 2021 – June 17, 2021	205.1 ppb	June 20, 2021, 5:00 – 5:30 pm	1,024 ppb
June 12, 2021 – June 18, 2021	207.1 ppb		
June 13, 2021– June 19, 2021	185.4 ppb		
June 14, 2021– June 20, 2021	153.5 ppb		
June 15, 2021– June 21, 2021	140.5 ppb		
June 16, 2021 – June 22, 2021	102.7 ppb		
June 17, 2021 – June 23, 2021	87.5 ppb		

New-Indy continues to create offensive odors in the community and the local community continues to file numerous odor and health-related complaints. Moreover, New-Indy is not even monitoring TRS and other toxic and malodorous air pollutant ambient concentrations at or beyond its fence-line, notwithstanding the toxic danger to the community presented by methyl mercaptan and other TRS components. *See* S.C. Code Regs. 61-62.5, Standard No. 8, Toxic Air Pollutants (designating methyl mercaptan as a toxic air pollutant considered 14 times more toxic than H_2S).

IV. EPA Has Failed to Diligently Prosecute New-Indy For its Violations of EPA's Order

The EPA has failed to diligently prosecute New-Indy for its violations of the emission limits imposed by the May 2021 EPA Order and the pending EPA Complaint. EPA has also failed to impose limits or require monitoring for emissions of TRS and other toxic air pollutants. EPA's Complaint and its lodged Consent Decree ("CD") are directed exclusively at New-Indy's emissions of H_2S, a small component of the Facility's toxic emissions, while ignoring its other toxic emissions of methyl mercaptan, dimethyl sulfide, and dimethyl disulfide, which dominate. The injunctive relief in the lodged CD relating to air emissions is comprised of monitoring for and treatment of H_2S.

Noticeably missing from the lodged CD are other malodorous and toxic compounds that are known to be present and emitted from New-Indy's foul condensate and WWTP in substantial amounts, including methyl mercaptan, dimethyl sulfide, dimethyl disulfide—which together with H_2S make up the family of compounds known as TRS—as well as other potentially toxic and malodorous volatile organic compounds. According to the EPA Order issued to New-Indy, "TRS [] emissions from kraft pulp mills are extremely odorous, and there are numerous instances of poorly controlled kraft mills creating public odor problems … [that] can have an adverse effect on public welfare…." Significantly, methyl mercaptan in particular is more dangerous to public health than H_2S and is regulated by the South Carolina air toxics law at concentrations 14 times more stringent than H_2S, thus indicating it is much more toxic.[2] But there is no requirement in the lodged CD to monitor for these harmful emissions like methyl mercaptan, let alone control them with technology such as an additional steam stripper to supplement the existing one that is too small to handle hundreds of thousands of gallons of foul condensate every day that are piped to the WWTP.

EPA has ignored the more dangerous component of methyl mercaptan and has ignored 90% of the toxic TRS emissions. The public deserves to have these emissions monitored and controlled as well, and the lodged CD fails to do so. EPA's refusal to enforce compliance for the predominant emissions from New-Indy constitutes a failure to diligently prosecute.

The steps taken to address New-Indy's H_2S problem by using treatment chemicals have created new problems. Extreme levels of H_2S were monitored off-site by EPA in April 2021 when most of the citizen complaints described the "rotten egg" odor symbolic of H_2S.[3] These rotten egg odors continued through the next several months as New-Indy's fence-line monitors registered emissions of H_2S in the tens to hundreds of ppb. *Id.* While the H_2S and related TRS sulfur-related

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[2] Methyl mercaptan has property line limits 14 times more stringent than H_2S. See S.C. Code Regs. 61-62.5, Standard No. 8, Toxic Air Pollutants.

[3] *See also* https://scdhec.gov/environment/environmental-sites-projects-permits-interest/new-indy-odor-investigation (April 2022 map showing monthly figure of odor reports, with most complaints describing rotten egg odors).

odors continue to be reported by residents to DHEC, a new sickening odor emanating from the New-Indy Facility has since emerged to impact the community miles from the Facility. Since approximately October 2021, when New-Indy reported that it was treating foul condensate and other wastewater streams at the WWTP, the odors experienced by residents miles downwind of the Facility are being reported as a "sickeningly sweet chemical odor." Chris Bullock, Citizens' expert chemical engineer with decades of experience in treating foul condensate, advises that the sickening sweet chemical odor is due to other volatile organic compounds that EPA's lodged CD does not address at all. By requiring a remedy that just creates new problems, EPA has failed to diligently prosecute New-Indy.

EPA's requiring New-Indy to monitor only for H_2S overlooks the majority of the TRS and other volatile chemical releases that are traversing the Facility's fence-line. EPA should be requiring New-Indy to test air emissions from the foul condensate and other locations where wastewater and sludge are exposed to the ambient air for these and other odor-causing chemicals so that the fence-line and community monitors can accurately and comprehensively assess the levels of *all* TRS compounds, as well as the other volatile constituents in the foul condensate. Yet, the lodged CD inexplicably requires New-Indy to monitor the foul condensate being dumped into the WWTP solely for oxidation reduction potential ("ORP") to determine the dosage of hydrogen peroxide (or other chemical oxidant) necessary to treat the H_2S. According to Mr. Bullock, this limited requirement will not treat or monitor the other volatile constituents in the foul condensate such as methanol, ethanol, and terpenes that cause sickening sweet emissions when exposed to the ambient air at the WWTP.

EPA has only required New-Indy to install three fence-line monitors pursuant to the May 2021 Emergency Order, and that was not changed by the lodged CD. Three monitors along a six mile fence line that tests only for H_2S, are clearly inadequate. This monitoring network leaves a huge gap of 5.8 miles between two of the three monitors. As a result, New-Indy's emissions will *not* be monitored at all for downwind residents to the west, southwest, and northwest of the Mill. Given the limited number of monitors, their locations, and their capability to monitor only H_2S, EPA has failed to diligently prosecute New-Indy.

Despite these major health and welfare impacts to thousands of residents downwind of the New-Indy Mill, the lodged CD has absolutely no requirements for New-Indy to monitor the level of its emissions in the community even though hundreds of odor and health complaints continue to pour into DHEC every month.[4] The only air monitoring requirements placed on New-Indy in the lodged CD are the three woefully inadequate fence-line monitors described above that are checking solely for H_2S. Although New-Indy is monitoring H_2S at five stations located within six miles of its fence-line,

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[4] *See* https://scdhec.gov/environment/environmental-sites-projects-permits-interest/new-indy-odor-investigation (including monthly figure of odor reports).

the vast majority of recent odor and adverse health effect complaints are from residents well beyond the locations of these five stations.[5]

The lodged CD addresses only H_2S as an air pollutant at the New-Indy Facility and fails to recognize that foul condensate contains other malodorous and toxic chemical constituents that are not treated by hydrogen peroxide or other oxidants. Therefore, it allows New-Indy to continue dumping up to 300,000 gallons or more of partially treated foul condensate into the open-air WWTP. This is wholly inconsistent with pulp mill industry practice which commonly uses a steam stripper to remove H_2S, methyl mercaptan, TRS, and volatile constituents from foul condensate before it is discharged as relatively odor-free wastewater to the WWTP.

The current steam stripper at the New-Indy Facility is undersized to handle at least 30% of the foul condensate typically generated and has been reported to be out of service on numerous occasions. This bypass of odor-generating foul condensate will balloon to some 800,000 gpd if/when New-Indy receives permission to increase mill pulp production rate by 50%. Not only does the lodged CD fail to require New-Indy to install an adequately sized steam stripper to treat all of the foul condensate at current and planned production rates, but it allows New-Indy to take the existing stripper offline for "scheduled and unscheduled maintenance" for up to 24 days (576 hours) during the first year and up to 19 days (460 hours) thereafter. It is recognized that New-Indy has provided a system to reduce foul condensate emissions with peroxide injection into the hard pipe bypass line. However, that system has been operating since October 2021 and thousands of odor complaints have been registered since then. At other pulp mills, foul condensate is kept inside the mill by either being incinerated, stored, or returned to the process where it is generated, or the mill is shut down if that cannot be accomplished. The lodged CD gives New-Indy a free pass to dump partially treated, and in some cases untreated, foul condensate into the WWTP where its malodorous and toxic constituents will be released to the community and not even monitored. EPA recognized the need for additional steam stripper capacity at the New-Indy Mill many months ago. In a May 5, 2021 internal email, EPA senior environmental engineer Patrick Foley advised his colleagues that New-Indy's "[odor] impacts may go on until they either reduce operating rate to match condensate production to stripper capacity or install additional stripper capacity. It may make sense to lead them by the nose to that conclusion." *See* Ex. 4, May 5, 2021 8:13am Email. Nevertheless, the lodged Consent Decree inexplicably allows New-Indy to continue business as usual without installing additional steam stripper capacity or reducing production to match stripper capacity. EPA has failed to diligently prosecute by not requiring adequate pollution controls.

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[5] The current community monitoring network, which consists of five New-Indy stations and three DHEC stations, covers an area of approximately 30 square miles while the primary odor complaint area is 265 square miles or nearly <u>nine times</u> larger. *See id.*

V. On-going Violations of 40 CFR 63.446

When New-Indy takes the steam stripper out of service, it relies entirely on its wastewater treatment system to treat pollutants. New-Indy is subject to the requirements of 40 CFR 63.446 of Subpart S. Those requirements include demonstration that the treatment system New-Indy uses, reduces, or destroys total hazardous air pollutants by at least 92% or more by weight (or comparable standard). New-Indy has not been able to achieve this standard since physical changes were made at the plant. It has reported violations related to excess methanol emissions in 2021 and during the first two quarters of 2022. These reports of non-compliance constitute violations of standards or limitations of the Clean Air Act.

VI. Persons Giving Notice and Representing Attorneys

Pursuant to 40 CFR § 54.3 the names and addresses of the persons providing this notice are as follows:

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VII. Conclusion

For all the above reasons, New-Indy has violated standards and limitations of the Clean Air Act and is subject to a Citizens' Suit pursuant to 42 U.S.C. § 7604(a). Please govern yourselves accordingly.

With kind regards, I remain,

Sincerely yours,

T. David Hoyle

cc: (certified mail & email (where indicated))

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Leonidas E. Stavrinakis, Esquire
Gary V. Mauney, Esquire

The Honorable Ralph Norman
Senator Michael Johnson

Exhibit 1

CONSTRUCTION PERMIT APPLICATION

RECEIVED

JUN 16 2020

BUREAU OF AIR QUALITY

PROJECT COLUMBIA ADDENDUM

NEW-INDY CATAWBA LLC – CATAWBA, SC MILL

APRIL 2020

PUBLIC COPY

Submitted by:

NEW INDY CONTAINERBOARD

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Catawba, SC 29704

Submitted to:

dhec S.C. Department of Health and Environmental Control

SC Department of Health and Environmental Control
Bureau of Air Quality – Division of Air Permitting
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Columbia, SC 29201

ALL4 APPROVED Quality Council

Digitally signed by Renee Cheng
Date: 2020.04.15 16:20:32 -04'00'

ALL4 Contact Information: info@all4inc.com | 610.933.5246 | www.all4inc.com

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LIST OF APPENDICES

1.0 INTRODUCTION

New-Indy Catawba LLC (New-Indy) operates a pulp and paper mill located in Catawba, South Carolina (Mill). On December 31, 2018 New-Indy Containerboard acquired the Mill from Resolute Forest Products. New-Indy plans to convert the Mill from bleached paper grades (lightweight coated paper and market pulp) to manufacturing unbleached or brown paper (linerboard and market pulp). New-Indy refers to this investment as Project Columbia.

Project Columbia features the conversion of the Kraft fiberline from manufacturing bleached paper grades to unbleached paper grades. The project includes converting the No. 3 coated paper machine to manufacture linerboard and the pulp dryer to process unbleached pulp. The project also includes retiring the bleach plant, chlorine dioxide plant, thermo-mechanical pulping (TMP) process, No. 1 paper machine, No. 1 coater, No. 2 coater and the No. 1 power boiler. Construction permit DF (c/p-DF) was issued for the project by the South Carolina Department of Health and Environmental Control (SCDHEC) in July 2019.

This addendum to the June 2019 construction permit application has been prepared to address changes in the project scope since the issuance of c/p-DF in July 2019, as required by permit condition J.3. This addendum does not address aspects of the project or c/p-DF that are not impacted by the changes in project scope.

2.0 PROJECT DESCRIPTION

After the issuance of c/p-DF the Mill began evaluating the pulping process condensate (foul condensate) treatment options available under 40 CFR Part 63, Subpart S. The current Mill configuration (operating as a bleached pulp mill) uses a steam stripper to treat foul condensates and comply with Subpart S. Following the conversion to brown paper grades, the Mill intends to shut down the condensate steam stripper and instead hard pipe the collected foul condensates to the wastewater treatment system to comply with Subpart S.

The Mill will install a new hard pipe (new ID 9802) from the foul condensate collection tank (ID 9800) directly to the aerated stabilization basin (aerated biotreatment, ID 2901). The new hard pipe will discharge the foul condensates below the liquid surface of the existing aerated stabilization basin (ASB) to allow biological treatment to begin immediately. The methanol loading in the foul condensate is expected to be approximately one-half the current level following the conversion to unbleached pulp production. The total volume of mill wastewater is also expected to be reduced by approximately 50% following the conversion to unbleached pulp production.

There are no physical changes planned to the wastewater treatment system other than the new hard pipe. The existing condensate stream stripper (ID 9801) will be retired in place following the conversion to unbleached pulp production.

3.0 EMISSIONS CALCULATIONS

The emissions from each emissions unit are calculated using published emissions factors from the National Council for Air and Stream Improvement (NCASI) or the U.S. Environmental Protection Agency (USEPA), unless more representative stack test data were available. Detailed citations for each emissions factor are provided with the calculations in Attachments C and D.

The emissions factors for the Kraft mill non-condensable gas (NCG) system have been updated to reflect the shutdown of the condensate steam stripper following the conversion to unbleached pulp production. This change results in a reduction in sulfur dioxide (SO_2), nitrogen oxides (NO_X), volatile organic compounds (VOC), carbon monoxide (CO), total reduced sulfur (TRS) and hydrogen sulfide (H_2S) emissions from the combustion of the stripper off gases (SOG) in the combination boilers.

The change in emissions from the wastewater treatment system due to the new hard pipe have been calculated using emissions models from NCASI for H_2S and USEPA for methanol. The NCASI H2SSIM model was used to estimate the increase in H_2S and TRS emissions from the ASB by modeling the ASB before and after the new hard pipe and assigning the predicted increase in emissions to the new hard pipe. Similarly, the USEPA WATER9 model was used to estimate the methanol and VOC emissions from the ASB before and after the new hard pipe. The H2SSIM and WATER9 model results are presented in Attachment F.

There are no other changes in the emissions factors from the June 2019 construction permit application related to c/p-DF. All emissions factors and the basis of all adjustments to the emissions factors related to the Kraft mill are presented in Attachment C.

4.0 REGULATORY APPLICABILITY

4.1 SOUTH CAROLINA REGULATION 61-62.5, STANDARD NO. 2 – AMBIENT AIR QUALITY STANDARDS

Standard No. 2 regulates maintenance of the national ambient air quality standards. New-Indy has reviewed the SCDHEC modeling guidance entitled "Guidance Concerning Other Information Used for Permitting Requirements in Demonstrating Emissions Do Not Interfere With Attainment or Maintenance of any State or Federal Standard" (February 28, 2017). Per the guidance, "a project involving a net facility-wide emissions decrease for a pollutant satisfies permitting review requirements. The netting calculation must be applied on a pollutant by pollutant basis. Facility-wide emission decreases, expressed in tons per year, could be calculated using current allowable to future allowable emissions or the netting methodologies in the PSD regulation."

The change in foul condensate treatment reduces the SO_2, NO_X and CO emissions from the combustion of SOG in the combination boilers by approximately 1,100, 200 and 20 tons per year, respectively compared to the levels in c/p-DF. There are no changes in emissions of particulate matter ($PM/PM_{10}/PM_{2.5}$) or lead due to the project. New-Indy believes this demonstrates the project will not interfere with attainment or maintenance of State or Federal Standards following the guidance of the SCDHEC.

4.2 SOUTH CAROLINA REGULATION 61-62.5, STANDARD NO. 7 – PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT REQUIREMENTS

Standard No. 7 applies to construction of a new major stationary source or a "project" conducted at an existing major stationary source located in an area designated as attainment or unclassifiable in 40 CFR 81.341. The Mill is considered a major stationary source because it emits or has the potential to emit 100 tons per year or more of a regulated New Source Review (NSR) pollutant as defined in SC Reg. 61-62.5, Standard No. 7. The Mill is located in York County, which is classified as attainment or unclassifiable for all pollutants. Because it includes physical changes to the Mill, Project Columbia is a "project" as defined in Standard No. 7(b)(40). New-Indy is updating the PSD applicability calculations with this addendum to include the hard pipe portion of Project Columbia.

4.2.1 Baseline Emissions Changes

New-Indy updated the 24-month baseline period selected for the existing emissions units that are part of Project Columbia to July 2010 through June 2012 to remain within the 10-year lookback period specified in Standard No. 7(b)(4)(ii). The baseline production rates are presented in Attachment E. New-Indy selected the same baseline period for all pollutants to simplify the PSD applicability analysis, although Standard No. 7(b)(4)(ii)(d) allows New-Indy to select a different 24-month baseline period for each pollutant. No changes were made to the emissions factors used to calculate the baseline emissions.

New-Indy reviewed the baseline emissions from the No. 1 power boiler using the updated baseline period to confirm the baseline emissions do not exceed the current 10% annual capacity factor fossil fuel usage limitation under 40 CFR Part 63, Subpart DDDDD. The baseline emissions are limited to no more than 1,997,280 gallons per year of No. 6 fuel oil. The average annual No. 6 fuel oil consumption during the baseline was 1,155,910 gallons per year, or approximately six percent (6%) of design capacity. The baseline emissions are limited to no more than 328,500 mmBtu per year of natural gas. The average annual natural gas consumption during the baseline was 35,321 mmBtu, or approximately one percent (1%) of design capacity. Therefore, the No. 1 power boiler actual emissions during the baseline period require no adjustments.

4.2.2 Projected Actual Emissions Changes

The projected actual emissions from the Kraft mill NCG system have been updated to reflect the condensate steam stripper will be retired following the conversion to unbleached pulp. The wastewater treatment system projected actual emissions have also been updated to reflect treating the foul condensates using the hard pipe instead of the condensate steam stripper.

New-Indy will manage future annual VOC emissions from the Mill so that a significant emissions increase does not occur and a PSD construction permit is not required due to installing the hard pipe. As noted in the June 2019 permit application, the pulp mill is not capable of supplying the pulp required to operate the No. 2 and No. 3 paper machines and the pulp dryer simultaneously at design capacity. However, New-Indy may choose to operate the three machines in any combination based on market conditions and customer orders.

New-Indy has projected a daily production rate for the No. 2 paper machine of [redacted] air dried tons finished product per day (ADTFP/day) to reflect future management of the VOC emissions from the Mill. The No. 2 paper machine may be operated at its design capacity of [redacted]

ADTFP/day, combined with the No. 3 paper machine or the pulp dryer operating at less than design capacity.

4.2.3 PSD Non-Applicability

The changes in emissions from the Mill as a result of Project Columbia were compared to the significant emission rates in Standard No. 7(b)(49). Based on the emission calculations described above, presented in Attachment B and summarized in Tables 1, 2 and 3, Project Columbia is not subject to the PSD permitting requirements in paragraphs (j) though (r) of Standard No. 7.

The projected total daily paper mill production exceeds the projected pulp mill production by approximately 47 percent, eliminating any reasonable possibility of New-Indy exceeding the PSD significant emissions rate for VOC following the conversion to unbleached pulp and installation of the hard pipe. Therefore, consistent with the USEPA New Source Review Policy Memorandum dated December 7, 2017[1], New-Indy believes no production limits are required to demonstrate PSD permitting requirements are not applicable to Project Columbia for the pollutant VOC.

1 https://www.epa.gov/sites/production/files/2017-12/documents/nsr_policy_memo.12.7.17.pdf

NEW INDY CONTAINERBOARD

Table 1
Baseline Actual Emissions

Emission Unit	Basis	VOC emissions tpy	CO emissions tpy	NO_x emissions tpy	SO_2 emissions tpy	TSP emissions tpy	PM_{10} emissions tpy	$PM_{2.5}$ emissions tpy	TRS emissions tpy	H_2S emissions tpy	LEAD emissions tpy	CO_2e emissions tpy
BASELINE ACTUAL EMISSIONS (BAE) - JULY 2010 through JUNE 2012												
Kraft Mill NCG System	Modified	103.09	20.18	199.12	1,876.42				17.24	3.83		
Kraft Mill Bleach Plant	Retired	63.09	211.33						1.18			
ClO2 Plant	Retired	0.32										
Methanol Tank	Retired	1.75										
No. 1 Paper Machine - Coated Paper	Retired	22.77				0.41	0.41	0.41				
No. 2 Paper Machine - Coated Paper	Modified	36.01				0.64	0.64	0.64				
No. 2 Paper Machine - Brown Paper	Modified	0.00				0.00	0.00	0.00	0.00			
No. 3 Paper Machine - Coated Paper	Modified	53.56				0.96	0.96	0.96				
No. 3 Paper Machine - Linerboard	Modified	0.00				0.00	0.00	0.00	0.00			
Pulp Dryer - Bleached	Modified	23.18				0.67	0.67	0.67	1.15			
Pulp Dryer - Unbleached	Modified	0.00				0.00	0.00	0.00	0.00			
No. 1 Coater - Natural Gas	Retired	1.10	8.71	7.99	0.05	0.15	0.61	0.61			0.00	9,366
No. 2 Coater - Natural Gas	Retired	1.78	10.88	12.96	0.08	0.25	0.98	0.98			0.00	15,178
No. 3 On-Machine Coater - Natural Gas	Retired	1.81	11.07	13.18	0.08	0.25	1.00	1.00			0.00	15,440
Starch Silos	Retired					0.83	0.51	0.19				
TMP	Retired	190.24										
TMP Bleaching	Retired	1.61										
Woodyard	affected	4.14				90.12	13.52	0.90				
Power Boiler - Natural Gas	Retired	0.21	1.28	4.27	0.01	0.03	0.12	0.12			0.00	1,786
Power Boiler - No. 6 Oil	Retired	1.04	2.74	25.73	163.27	11.35	8.69	0.70			0.00	13,657
Wastewater System	Modified	521.52							127.61	5.83		
TOTAL BASELINE EMISSIONS		1,027.2	264.3	263.2	2,039.9	105.7	28.3	13.2	147.3	9.7	0.00	55,428

Table 2
Projected Actual Emissions

Emission Unit	Basis	VOC emissions tpy	CO emissions tpy	NO_X emissions tpy	SO_2 emissions tpy	TSP emissions tpy	PM_{10} emissions tpy	$PM_{2.5}$ emissions tpy	TRS emissions tpy	H_2S emissions tpy	LEAD emissions tpy	CO_2e emissions tpy
PROJECTED ACTUAL EMISSIONS (PAE)												
Kraft Mill NCG System	Modified	12.58	0.00	0.00	777.30				7.00	1.90		
Kraft Mill Bleach Plant	Retired	0.00	0.00						0.00			
ClO2 Plant	Retired	0.00										
Methanol Tank	Retired	0.00										
No. 1 Paper Machine - Coated Paper	Retired	0.00				0.00	0.00	0.00				
No. 2 Paper Machine - Coated Paper	Modified	0.00				0.00	0.00	0.00				
No. 2 Paper Machine - Brown Paper	Modified	18.78				0.05	0.05	0.05	0.74			
No. 3 Paper Machine - Coated Paper	Modified	0.00				0.00	0.00	0.00				
No. 3 Paper Machine - Linerboard	Modified	345.11				0.88	0.88	0.88	13.09			
Pulp Dryer - Bleached	Modified	0.00				0.00	0.00	0.00	0.00			
Pulp Dryer - Unbleached	Modified	93.40				0.24	0.24	0.24	3.70			
No. 1 Coater - Natural Gas	Retired	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0
No. 2 Coater - Natural Gas	Retired	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0
No. 3 On-Machine Coater - Natural Gas	Retired	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0
Starch Silos	Retired					0.00	0.00	0.00				
TMP	Retired	0.00										
TMP Bleaching	Retired	0.00										
Woodyard	affected	4.21				105.00	15.75	1.05				
Power Boiler - Natural Gas	Retired	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0
Power Boiler - No. 6 Oil	Retired	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0
Wastewater System	Modified	582.66							128.82	9.06		
TOTAL PROJECTED EMISSIONS		1,056.7	0.0	0.0	777.3	106.2	16.9	2.2	154.1	11.9	0.00	0

Table 3
Net Emissions Increase

Emission Unit	Basis	VOC emissions tpy	CO emissions tpy	NO_x emissions tpy	SO_2 emissions tpy	TSP emissions tpy	PM_{10} emissions tpy	$PM_{2.5}$ emissions tpy	TRS emissions tpy	H_2S emissions tpy	LEAD emissions tpy	CO_2e emissions tpy
NSR APPLICABILITY - BAE-to-PAE												
TOTAL BASELINE EMISSIONS		1,027.2	264.2	263.2	2,039.9	105.7	28.3	13.2	147.2	9.7	0.00	55,428
TOTAL PROJECTED EMISSIONS		1,066.7	0.0	0.0	777.3	106.2	16.9	2.2	154.1	11.9	0.00	0
NET EMISSION INCREASE		**39.5**	(264.2)	(263.2)	(1,262.6)	0.5	(11.4)	(11.0)	6.9	2.2	(0.0)	(55,428)
NSR Threshold		40	100	40	40	25	15	10	10	10	0.6	75,000

4.3 SOUTH CAROLINA REGULATION 61-62.5, STANDARD NO. 7 – PREVENTION OF SIGNIFICANT DETERIORATION AIR DISPERSION MODELING REQUIREMENTS

Standard No. 7 also includes PSD air quality increments which apply to all increases and decreases in PSD pollutant emissions following the PSD minor source baseline date. In York County the minor source baseline dates are December 1, 1981 for PM_{10} and SO_2, April 5, 2001 for NO_X and March 3, 2017 for $PM_{2.5}$.

SCDHEC issued guidance concerning the PSD ambient air increments and air dispersion modeling demonstrations on February 27, 2017. In the guidance, SCDHEC suspended the requirement to model the change in PSD increment consumption. The new guidance requires facilities in counties where the minor source baseline date has been triggered to submit information to assess the consumption of the PSD increment.

As shown in Table 4 of Section 4.2.3, Project Columbia will result in a projected decrease in PM_{10}, $PM_{2.5}$, NO_X and SO_2 emissions from the Mill. New-Indy believes this demonstrates the project will not interfere with attainment or maintenance of State or Federal Standards following the SCDHEC guidance issued on February 28, 2017.

4.4 SOUTH CAROLINA REGULATION 61-62.5, STANDARD NO. 8 – TOXIC AIR POLLUTANTS (TAP)

Standard No. 8 regulates emissions or air toxics compounds emitted from new and existing sources. The Standard does not apply to fuel burning sources which burn only virgin or specification used oil. Section I.D(1) of the rule exempts sources subject to a Federal National Emission Standard for Hazardous Air Pollutants (NESHAP). The Mill is subject to Federal NESHAP for the pulp and paper source category (Subparts S and MM), industrial boilers (Subpart DDDDD) and reciprocating internal combustion engines (Subpart ZZZZ). Section I.D(2) exempts non-NESHAP sources after a facility-wide residual risk analysis is completed. USEPA published the results of facility-wide residual risk analyses for Subpart S sources on December 27, 2011, and for Subpart MM sources on December 30, 2017. The residual risk analyses completed by USEPA concluded there was no unacceptable risk from pulp and paper mills. Therefore, all sources at the Mill are exempt from Standard No. 8 under both D(1) and D(2).

The Mill emits two South Carolina TAPs which are not listed hazardous air pollutants (HAP), H_2S and methyl mercaptan. Both compounds are generated by the Kraft pulping process and are components of TRS gases that are contained in low volume high concentration (LVHC) and high volume low concentration (HVLC) gases. Section I.D(3) allows sources to request an exemption for non-HAPs controlled by NESHAP controls to reduce HAPs.

The Mill treats the LVHC and HVLC gases by combustion in compliance with Subpart S, and for the applicable emission units, 40 CFR 60 Subpart BB. The Mill also complies with the condensate collection and treatment requirements under Subpart S. At the Mill, collected foul condensates are treated using the hard pipe (ID 9802) and the wastewater treatment system (ID 2901) to remove the HAPs and TRS compounds. By treating the foul condensates using the hard pipe, more than 96% of the HAPs and 94% of the TRS compounds are removed biologically in the wastewater treatment system (ID 2901). For these reasons, New-Indy believes H_2S and methyl mercaptan are exempt from compliance demonstrations under Standard No. 8.

4.5 SOUTH CAROLINA REGULATION 61-62.70 - TITLE V OPERATING PERMIT PROGRAM

The Mill currently operates under Title V Operating Permit TV-2440-0005. New-Indy will submit revised Title V permit application forms for these sources within one year of startup of the modified equipment. The revised Title V application will address monitoring, recordkeeping, and reporting requirements.

4.6 40 CFR 60, SUBPART BB – STANDARDS OF PERFORMANCE FOR KRAFT PULP MILLS AND SUBPART BBA – STANDARDS FOR PERFORMANCE OF KRAFT PULP MILLS AFFECTED SOURCES FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER MAY 23, 2013.

40 CFR Part 60, Subparts BB and BBa regulate emissions of PM and TRS from affected sources at Kraft Pulp Mills. The shutdown of the condensate stripper system will not change the applicability of Subpart BB or BBa, other than there will be no emissions from the condensate steam stripper. Wastewater treatment systems are not regulated under Subpart BB or BBa.

4.7 40 CFR 63, SUBPART S – NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FROM THE PULP AND PAPER INDUSTRY

40 CFR Part 63, Subpart S regulates emissions of HAPs from pulping, bleaching, and condensate handling operations located at pulp and paper mills that are a major source of HAP. The Mill emits greater than 10 tons per year of individual HAP and greater than 25 tons per year of total HAP qualifying it as a major source for HAP emissions. The Mill is regulated by Subpart S.

The existing pulping process condensates generated in the digester system, turpentine recovery system, evaporator systems, and LVHC and HVLC closed collection systems at the Mill comply with the collection requirements in §63.446(c)(3) and the treatment requirements in §63.446(e)(5) for mills that perform bleaching. Following Project Columbia, the pulping process condensates will comply with the collection requirements in §63.446(c)(1) or (c)(3) and the treatment requirements in §63.446(e)(2) and (e)(3) or (e)(4) for mills that do not perform bleaching. The Mill will comply with the requirements in 63.446(e)(2) following the conversion to producing unbleached pulp using the new hard pipe (ID 9802) to discharge the pulping process condensates below the liquid surface of the wastewater treatment system aerated stabilization basin (ID 2901). The hard pipe will also comply with the closed collection system requirements in 63.446(d).

The current monitoring and recordkeeping under Subpart S for collection and treatment of the pulping process condensates will be different when using the hard pipe and wastewater treatment system for compliance. Following the conversion to unbleached pulp, the Mill will comply with the monitoring requirements for the hard pipe under §63.453(l) and the wastewater treatment system ASB under §63.453(j) and (p). The Mill intends to comply with §63.453(j)(2) and (3) and establish site-specific daily monitoring parameters under §63.453(n) during the initial performance test of the wastewater treatment system ASB performed under §63.457. The initial performance test of the ASB is required by §63.7(a)(2) to be completed within 180 days following the startup of the hard pipe for treating the pulping process condensates.

4.8 40 CFR 51, SUBPART BB—DATA REQUIREMENTS FOR CHARACTERIZING AIR QUALITY FOR THE PRIMARY SO_2 NAAQS (SO_2 DATA REQUIREMENTS RULE OR SO_2 DRR)

The Mill submitted facility-wide air dispersion modeling in November 2016 to comply with 40 CFR 51.1203(d). The projected actual SO_2 emissions following Project Columbia are expected to remain below the SO_2 emission rates included in the modeling analysis submitted in 2016. The Mill will continue to annually review the actual SO_2 emission rates against the 2016 model emission rates to determine if an updated modeling demonstration is necessary.

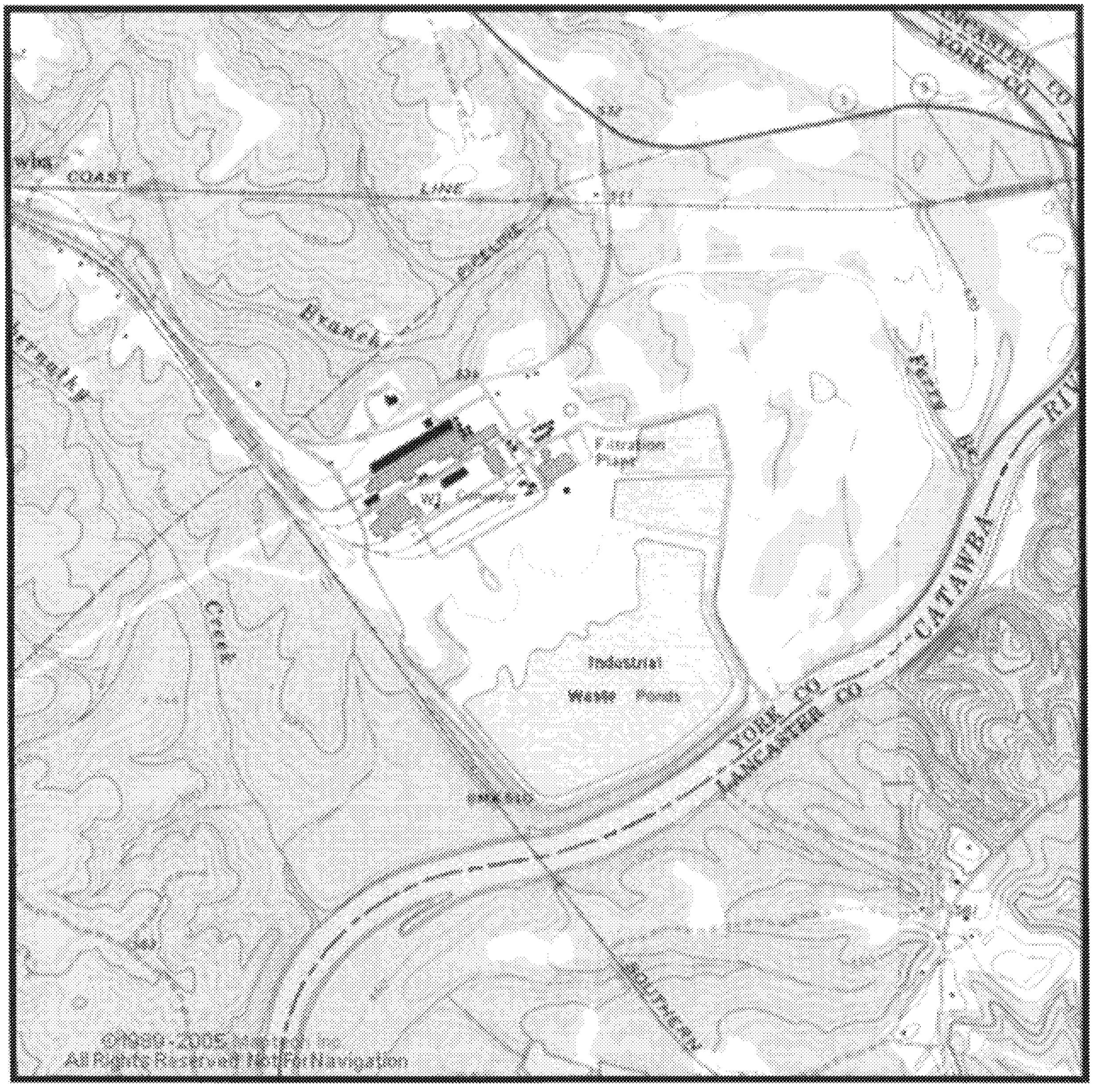
Legend

- → Process Flow
- → Waterfall
- ⇒ Open Trench
- New Equipment

Note: This is a simplified process flow diagram based on preliminary design information.

PUBLIC	Wastewater Treatment System
NEW INDY CONTAINERBOARD	Simplified Process Flow Diagram New-Indy Catawba LLC Catawba, SC

Figure 2
USGS MAP
New-Indy – Catawba Mill



APPENDIX A - APPLICATION FORMS

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Bureau of Air Quality
Expedited Review Request Instructions
Construction Permits

APPLICATION IDENTIFICATION		
Facility Name *(This should be the name used to identify the facility)*	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)*	Request Date
New-Indy Catawba LLC	2440 - 0005	April 13, 2020

PRIMARY AIR PERMIT CONTACT			
Title/Position: Environmental Manager	Mr.	First Name: Mike	Last Name: Swanson
E-mail Address: mike.swanson@new-indycb.com		Phone No.: (803) 981-8010	Cell No.: ( ) -

SECONDARY AIR PERMIT CONTACT *(If the Department is unable to contact the primary air permit contact please provided a secondary contact.)*			
Title/Position:		First Name:	Last Name:
E-mail Address:		Phone No.:	Cell No.: ( ) -

Check One	Permit Type	Expedited Review Days*	Fee**
☒	Minor Source Construction Permit	30	$3,000
☐	Synthetic Minor Construction Permit	65	$4,000
☐	Prevention of Significant Deterioration (PSD) not impacting a Class I Area (no Class I modeling required)	120	$20,000
☐	Prevention of Significant Deterioration (PSD) Modification not impacting a Class I Area (no Class I modeling required) No BACT limit change but requires Public Notice	120	$5,000
☐	Prevention of Significant Deterioration (PSD) Modification not impacting a Class I Area (no Class I modeling required) Number of BACT Pollutants ☐ X $5,000 per BACT modification	120	Total Fee $ Maximum of $20,000
☐	Prevention of Significant Deterioration (PSD) impacting a Class I Area (Class I modeling required)	150	$25,000
☐	Prevention of Significant Deterioration (PSD) Modification impacting a Class I Area (Class I modeling required) No BACT limit change but requires Public Notice	150	$5,000
☐	Prevention of Significant Deterioration (PSD) Modification impacting a Class I Area (Class I modeling required) Number of BACT Pollutants ☐ X $5,000 per BACT modification	150	Total Fee $ Maximum of $25,000
☐	**Concrete** Minor Source Construction Permit Relocation Request	10	$1,500
☐	**Asphalt** Synthetic Minor Construction Permit Relocation Request	15	$3,500

*All days above are calendar days, but exclude State holidays, and building closure dates due to severe weather or other emergencies. Expedited days for asphalt and concrete also exclude weekends.

****DO NOT SEND PAYMENT UNTIL THE APPLICATION HAS BEEN ACCEPTED INTO THE EXPEDITED PROGRAM.** <u>If chosen for expedited review, you will be notified by phone for verbal acceptance into the program. Fees must be paid within five business days of acceptance.</u>

dhec

PRIMARY AIR PERMIT CONTACT SIGNATURE
I have read the most recent version of the Expedited Review Program Standard Operating Procedures and accept all of the terms and conditions within. I understand that it is my responsibility to ensure an application of the highest quality is submitted in a timely manner, and to address any requests for additional information by the deadline specified. I understand that submittal of this request form is not a guarantee that expedited review will be granted.

4/16/20

Signature of Primary Air Permit Contact — Date

RECEIVED
JUN 16 2020
BUREAU OF AIR QUALITY

dhec

Bureau of Air Quality
Construction Permit Application
Facility Information
Page 1 of 3

FACILITY IDENTIFICATION	
SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 2440 - 0005	Application Date April 13, 2020
Facility Name *(This should be the name used to identify the facility at the physical address listed below)* New-Indy Catawba LLC	Facility Federal Tax Identification Number *(Established by the U.S. Internal Revenue Service to identify a business entity)* [redacted]

FACILITY PHYSICAL ADDRESS			
Physical Address: 5300 Cureton Ferry Road			County: York
City: Catawba		State: SC	Zip Code: 29704
Facility Coordinates *(Facility coordinates should be based at the front door or main entrance of the facility.)*			
Latitude: 34°50'37"N	Longitude: 80°53'25"W		☐ NAD27 *(North American Datum of 1927)* Or ☒ NAD83 *(North American Datum of 1983)*

CO-LOCATION DETERMINATION
Are there other facilities in close proximity that could be considered co-located? ☒ No ☐ Yes*
List potential co-located facilities, including air permit numbers if applicable:

**If yes, please submit co-location applicability determination details in an attachment to this application.*

COMMUNITY OUTREACH
What are the potential air issues and community concerns? Please provide a brief description of potential air issues and community concerns about the entire facility and/or specific project. Include how these issues and concerns are being addressed, if the community has been informed of the proposed construction project, and if so, how they have been informed. No issues or concerns. This project will lower air emissions for many pollutants.

FACILITY'S PRODUCTS / SERVICES	
Primary Products / Services *(List the primary product and/or service)* Linerboard/Pulp Manufacturing	
Primary SIC Code *(Standard Industrial Classification Codes)* 2631	Primary NAICS Code *(North American Industry Classification System)* 322130
Other Products / Services *(List any other products and/or services)*	
Other SIC Code(s):	Other NAICS Code(s):

AIR PERMIT FACILITY CONTACT *(Person at the facility who can answer technical questions about the facility and permit application.)*			
Title/Position: Environmental Manager	Salutation: Mr.	First Name: Mike	Last Name: Swanson
Mailing Address: PO Box 7			
City: Catawba		State: SC	Zip Code: 29704
E-mail Address: mike.swanson@new-indycb.com		Phone No.: (803) 981-8010	Cell No.:

Bureau of Air Quality
Construction Permit Application
Facility Information

The signed permit will be e-mailed to the designated Air Permit Contact. If additional individuals need copies of the permit, please provide their names and e-mail addresses.	
Name	**E-mail Address**
Steven Moore	steven.moore@all4inc.com

CONFIDENTIAL INFORMATION / DATA
Does this application contain confidential information or data? ☐ No ☒ Yes*

If yes, include a sanitized version of the application for public review and* ***ONLY ONE COPY OF CONFIDENTIAL INFORMATION SHOULD BE SUBMITTED*

LIST OF FORMS INCLUDED *(Identify all forms included in the application package)*	
Form Name	**Included (Y/N)**
Expedited Review Request (DHEC Form 2212)	☒ Yes ☐ No
Equipment/Processes (DHEC Form 2567)	☒ Yes
Emissions (DHEC Form 2569)	☒ Yes
Regulatory Review (DHEC Form 2570)	☒ Yes
Emissions Point Information (DHEC Form 2573)	☒ Yes ☐ No (If No, Explain)

OWNER OR OPERATOR			
Title/Position: Technical Manager	Salutation: Mr.	First Name: Charles	Last Name: Cleveland
Mailing Address: PO Box 7			
City: Catawba		State: SC	Zip Code: 29704
E-mail Address: pete.cleveland@new-indycb.com		Phone No.: 803-981-8206	Cell No.:

OWNER OR OPERATOR SIGNATURE
I certify, to the best of my knowledge and belief, that no applicable standards and/or regulations will be contravened or violated. I certify that any application form, report, or compliance certification submitted in this permit application is true, accurate, and complete based on information and belief formed after reasonable inquiry. I understand that any statements and/or descriptions, which are found to be incorrect, may result in the immediate revocation of any permit issued for this application.

[signature] 04/16/2020

Signature of Owner or Operator Date

PERSON AND/OR FIRM THAT PREPARED THIS APPLICATION *(If not the same person as the Professional Engineer who has reviewed and signed this application.)*			
Consulting Firm Name: ALL4			
Title/Position: Senior Project Manager	Salutation: Mr.	First Name: Steven	Last Name: Moore
Mailing Address: 630 Davis Drive, Suite 220			
City: Durham		State: NC	Zip Code: 27560
E-mail Address: steven.moore@all4inc.com		Phone No.: (919) 234-5981	Cell No.: (864) 616-4711
SC Professional Engineer License/Registration No. (if applicable):			

PERSON AND/OR FIRM THAT PREPARED THIS APPLICATION *(If not the same person as the Professional Engineer who has reviewed and signed this application.)*			
Consulting Firm Name: ALL4			
Title/Position: Senior Project Manager	Salutation: Mr.	First Name: Steven	Last Name: Moore
Mailing Address: 630 Davis Drive, Suite 220			
City: Durham		State: NC	Zip Code: 27560
E-mail Address: steven.moore@all4inc.com		Phone No.: (919) 234-5981	Cell No.: (864) 616-4711
SC Professional Engineer License/Registration No. (if applicable):			

PROFESSIONAL ENGINEER INFORMATION			
Consulting Firm Name: ALL4			
Title/Position: PE	Salutation: Ms.	First Name: Amy	Last Name: Marshall
Mailing Address: 630 Davis Drive, Suite 220			
City: Durham		State: NC	Zip Code: 27560
E-mail Address: amarshall@all4inc.com		Phone No.: (984) 777-3073	Cell No.:
SC License/Registration No.: 22147			
PROFESSIONAL ENGINEER SIGNATURE			
I have placed my signature and seal on the engineering documents submitted, signifying that I have reviewed this construction permit application as it pertains to the requirements of *South Carolina Regulation 61-62, Air Pollution Control Regulations and Standards*.			

No. 22147

Amy Marshall 4/14/20

Signature of Professional Engineer Date

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Bureau of Air Quality
Construction Permit Application
Equipment / Processes

APPLICATION IDENTIFICATION

(Please ensure that the information list in this table is the same on all of the forms and required information submitted in this construction permit application package.)

Facility Name *(This should be the name used to identify the facility)*	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)*	Application Date
New-Indy Catawba LLC	2440 - 0005	April 13, 2020

PROJECT DESCRIPTION

Brief Project Description (What, why, how, etc.): Modify Kraft pulp mill to manufacture unbleached pulp. Treat foul condensate using hard pipe and wastewater treatment system (aerated biotreatment) and retire condensate steam stripper.

ATTACHMENTS

☒ Process Flow Diagram — Location in Application: Figure 1
☒ Detailed Project Description — Location in Application: Section 2

EQUIPMENT / PROCESS INFORMATION

Equipment ID Process ID	Action	Equipment / Process Description	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
9801	☐ Add ☒ Remove ☐ Modify ☐ Other	Condensate Steam Stripper	[redacted]	9820, 2605, 3705	VOC, HAPs, TRS	Stripper Off Gases (SOGs) Collection System	2610S1, 2610S2
9802	☒ Add ☐ Remove ☐ Modify ☐ Other	Hard Pipe		2901	VOC, HAPs, TRS	Hard Pipe	None
2901	☐ Add ☐ Remove ☒ Modify ☐ Other	Aerated Biotreatment (Aerated Stabilization Basin)		None	VOC, HAPs, TRS	Aerated Biotreatment	Fugitive

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Bureau of Air Quality
Construction Permit Application
Equipment / Processes

CONTROL DEVICE INFORMATION

Control Device ID	Action	Control Device Description	Maximum Design Capacity (Units)	Inherent/Required/Voluntary (Explain)	Destruction/Removal Efficiency Determination
9820	☐ Add ☐ Remove ☒ Modify ☐ Other	Stripper Off Gases (SOGs) Collection System	[redacted]	Required to comply with 40 CFR Part 60, Subpart BB/BBa and 40 CFR Part 63, Subpart S	99.9%
9802	☒ Add ☐ Remove ☐ Modify ☐ Other	Hard Pipe	[redacted]	Required to comply with 40 CFR Part 63, Subpart S	>95%
2901	☐ Add ☐ Remove ☒ Modify ☐ Other	Aerated Biotreatment	[redacted]	Required to comply with 40 CFR Part 63, Subpart S	>95%

RAW MATERIAL AND PRODUCT INFORMATION

Equipment ID Process ID Control Device ID	Raw Material(s)	Product(s)	Fuels Combusted
9802	Foul Condensate	None	none
2901	Foul Condensate, Mill Wastewater	Treated Wastewater	none

MONITORING AND REPORTING INFORMATION

Equipment ID Process ID Control Device ID	Pollutant(s)/Parameter(s) Monitored	Monitoring Frequency	Reporting Frequency	Monitoring/Reporting Basis	Averaging Period(s)
2901	Condensate Treatment	Daily	Semi-annual	40 CFR Subpart 63 Subpart S	15-days

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Bureau of Air Quality
Construction Permit Application
Emissions
Page 1 of 2

APPLICATION IDENTIFICATION (*Please ensure that the information list in this table is the same on all of the forms and required information submitted in this construction permit application package.*)		
Facility Name (*This should be the name used to identify the facility*)	SC Air Permit Number (8-digits only) (*Leave blank if one has never been assigned*)	Application Date
New-Indy Catawba LLC	2440 - 0005	April 13, 2020

ATTACHMENTS (*Check all the appropriate checkboxes if included as an attachment*)	
☒ Sample Calculations, Emission Factors Used, etc.	☒ Detailed Explanation of Assumptions, Bottlenecks, etc.
☒ Supporting Information: Manufacturer's Data, etc.	☐ Source Test Information
☒ Details on Limits Being Taken for PTE Emissions	☒ NSR Analysis

SUMMARY OF PROJECTED CHANGE IN FACILITY WIDE POTENTIAL EMISSIONS
(Calculated at maximum design capacity.)

Pollutants	Emission Rates Prior to Construction / Modification (tons/year)			Emission Rates After Construction / Modification (tons/year)		
	Uncontrolled	Controlled	PTE	Uncontrolled	Controlled	PTE
Particulate Matter (PM)	111,415	1,991	NA	111,340	1,799	NA
Particulate Matter <10 Microns (PM_{10})	77,797	1,252	NA	77,683	1,109	NA
Particulate Matter <2.5 Microns ($PM_{2.5}$)	65,298	993	NA	65,355	891	NA
Sulfur Dioxide (SO_2)	24,147	24,147	NA	21,131	21,131	NA
Nitrogen Oxides (NO_x)	3,630	3,630	NA	2,823	2,823	NA
Carbon Monoxide (CO)	3,601	3,601	NA	3,108	3,108	NA
Volatile Organic Compounds (VOC)	10,658	1,942	NA	8,738	1,374	NA
Lead (Pb)	14.3	14.3	NA	14.3	14.3	NA
Highest HAP Prior to Construction (CAS #: 67561)	6,955	917	NA	5,985	884	NA
Highest HAP After Construction (CAS #: 67561)	6,955	917	NA	5,985	884	NA
Total HAP Emissions*	7,331	1,129	NA	6,297	1,066	NA

Include emissions from exempt equipment and emission increases from process changes that were exempt from construction permits.
(*All HAP emitted from the various equipment or processes must be listed in the appropriate "Potential Emission Rates at Maximum Design Capacity" Table)

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Bureau of Air Quality
Construction Permit Application
Emissions

POTENTIAL EMISSION RATES AT MAXIMUM DESIGN CAPACITY									
Equipment ID / Process ID	Emission Point ID	Pollutants (Include CAS #)	Calculation Methods / Limits Taken / Other Comments	Uncontrolled		Controlled		PTE	
				lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
9802, 2901	Fugitive	TRS	See Attachment B	29.5	129	NA	NA	NA	NA
9802, 2901	Fugitive	H2S	See Attachment B	2.27	10.0	NA	NA	NA	NA
9802, 2901	fugitive	VOC	See Attachment B	135	593	NA	NA	NA	NA
9802, 2901	fugitive	Methanol	See Attachment B	135	593	NA	NA	NA	NA

Bureau of Air Quality
Construction Permit Application
Regulatory Review

APPLICATION IDENTIFICATION		
(Please ensure that the information list in this table is the same on all of the forms and required information submitted in this construction permit application package.)		
Facility Name *(This should be the name used to identify the facility)*	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)*	Application Date
New-Indy Catawba LLC	2440 - 0005	April 13, 2020

STATE AND FEDERAL AIR POLLUTION CONTROL REGULATIONS AND STANDARDS
(If not listed below add any additional regulations that are triggered.)

Regulation	Applicable: Yes	Applicable: No	Explain Applicability Determination	List the specific limitations and/or requirements that apply.	How will compliance be demonstrated?
			Include all limits, work practices, monitoring, record keeping, etc.		
Regulation 61-62.1, Section II(E) Synthetic Minor Construction Permits	☐	☒	Permitted paper mill production exceeds permitted pulp mill production by 47%		
Regulation 61-62.1, Section II(G) Conditional Major Operating Permits	☐	☒	Facility is Title V source		
Regulation 61-62.5, Standard No. 1 Emissions from Fuel Burning Operations	☐	☒	Applicable to fuel burning operations		
Regulation 61-62.5, Standard No. 2 Ambient Air Quality Standards	☒	☐	Applies to all sources	none	Modeling demonstration not required, future allowable emissions (tpy) lower than current allowable emissions (tpy)
Regulation 61-62.5, Standard No. 3 Waste Combustion and Reduction	☐	☒	NESHAP control devices exempt		
Regulation 61-62.5, Standard No. 4 Emissions from Process Industries	☐	☒	No PM emissions from modified sources		
Regulation 61-62.5, Standard No. 5 Volatile Organic Compounds	☐	☒	Not a regulated activity		
Regulation 61-62.5, Standard No. 5.2 Control of Oxides of Nitrogen	☐	☒	No burner modifications		
Regulation 61-62.5, Standard No. 7 Prevention of Significant Deterioration*	☐	☒	Modification is not subject to PSD		

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Bureau of Air Quality
Construction Permit Application
Regulatory Review

STATE AND FEDERAL AIR POLLUTION CONTROL REGULATIONS AND STANDARDS
(If not listed below add any additional regulations that are triggered.)

Regulation	Applicable		Include all limits, work practices, monitoring, record keeping, etc.		
	Yes	No	Explain Applicability Determination	List the specific limitations and/or requirements that apply.	How will compliance be demonstrated?
Regulation 61-62.5, Standard No. 7.1 Nonattainment New Source Review*	☐	☒	Attainment area		
Regulation 61-62.5, Standard No. 8 Toxic Air Pollutants	☐	☒	All sources subject to NESHAP or included in NESHAP Subpart S Risk and Technology Review (RTR)		
Regulation 61-62.6 Control of Fugitive Particulate Matter	☐	☒	Applies to fugitive dust sources		
Regulation 61-62.68 Chemical Accident Prevention Provisions	☐	☒	Not a regulated activity		
Regulation 61-62.70 Title V Operating Permit Program	☒	☐	Facility has Title V operating permit		
40 CFR Part 64 - Compliance Assurance Monitoring (CAM)	☐	☒	NESHAP Subpart S sources		
40 CFR 60 Subpart A - General Provisions	☐	☒	Does not apply to hard pipe/wastewater		
40 CFR 60 Subpart BB/BBa – Kraft Pulp Mill NSPS	☐	☒	Does not apply to hard pipe/wastewater		
40 CFR 61 Subpart A - General Provisions	☐	☒	Not a regulated activity		
40 CFR 63 Subpart A - General Provisions	☒	☐	Applies to NESHAP Subpart S sources		
40 CFR 63 Subpart S – Pulp and Paper MACT	☒	☐	Applies to hard pipe/wastewater	HAP emission limits	Monitoring and testing established per 63.453(j)(2) and (3) and 63.453(l)

* Green House Gas emissions must be quantified if these regulations are triggered.

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Bureau of Air Quality
Emission Point Information

A. APPLICATION IDENTIFICATION	
1. Facility Name: New-Indy Catawba LLC	
2. SC Air Permit Number (if known; 8-digits only): 2440 - 0005	3. Application Date: April 13, 2020
4. Project Description: Modify Kraft pulp mill to manufacture unbleached pulp. Treat foul condensate using hard pipe and wastewater treatment system (aerated biotreatment) and retire condensate steam stripper. No changes to modeled emission rates are required.	

B. FACILITY INFORMATION	
1. Is your company a Small Business? ☐ Yes ☒ No	2. If a Small Business or small government facility, is Bureau assistance being requested? ☐ Yes ☒ No
3. Are other facilities collocated for air compliance? ☐ Yes ☒ No	4. If Yes, provide permit numbers of collocated facilities:

C. AIR CONTACT			
Consulting Firm Name (if applicable):			
Title/Position: Environmental Manager	Salutation: Mr.	First Name: Mike	Last Name: Swanson
Mailing Address: P.O. Box 7			
City: Catawba		State: SC	Zip Code: 29704
E-mail Address: mike.swanson@new-indycb.com		Phone No.: (803) 981-8010	Cell No.:

D. EMISSION POINT DISPERSION PARAMETERS
Source data requirements are based on the appropriate source classification. Each emission point is classified as a point, area, volume, or flare source. Contact the Bureau of Air Quality for clarification of data requirements. Include sources on a scaled site map. Also, a picture of area or volume sources would be helpful but is not required. A user generated document or spreadsheet may be substituted in lieu of this form provided all of the required emission point parameters are submitted in the same order, units, etc. as presented in these tables.
Abbreviations / Units of Measure: UTM = Universal Transverse Mercator; °N = Degrees North; °W = Degrees West; m = meters; AGL = Above Ground Level; ft = feet; ft/s = feet per second; ° = Degrees; °F = Degrees Fahrenheit

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Bureau of Air Quality
Emission Point Information
Page 2 of 4

E. POINT SOURCE DATA
(Point sources such as stacks, chimneys, exhaust fans, and vents.)

Emission Point ID	Description/Name	Point Source Coordinates Projection:				Release Height AGL (ft)	Temp. (°F)	Exit Velocity (ft/s)	Inside Diameter (ft)	Discharge Orientation	Rain Cap? (Y/N)	Distance To Nearest Property Boundary (ft)	Building		
		UTM E (m)	UTM N (m)	Lat (°N)	Long (°W)								Height (ft)	Length (ft)	Width (ft)

F. AREA SOURCE DATA
(Area sources such as storage piles, and other sources that have low level or ground level releases with no plumes.)

Emission Point ID	Description/Name	Area Source Coordinates Projection:				Release Height AGL (ft)	Easterly Length (ft)	Northerly Length (ft)	Angle From North (°)	Distance To Nearest Property Boundary (ft)
		UTM E (m)	UTM N (m)	Lat (°N)	Long (°W)					

G. VOLUME SOURCE DATA
(Volume sources such as building fugitives that have initial dispersion vertical depth prior to release.)

Emission Point ID	Description/Name	Volume Source Coordinates Projection:				Release Height AGL (ft)	Initial Horizontal Dimension (ft)	Initial Vertical Dimension (ft)	Distance To Nearest Property Boundary (ft)
		UTM E (m)	UTM N (m)	Lat (°N)	Long (°W)				

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Bureau of Air Quality
Emission Point Information

H. FLARE SOURCE DATA
(Point sources where the combustion takes place at the tip of the stack.)

Emission Point ID	Description/Name	Flare Source Coordinates Projection:				Release Height AGL (ft)	Heat Release Rate (BTU/hr)	Distance To Nearest Property Boundary (ft)	Building		
		UTM E (m)	UTM N (m)	Lat (°N)	Long (°W)				Height (ft)	Length (ft)	Width (ft)

I. AREA CIRCULAR SOURCE DATA

Emission Point ID	Description/Name	Area Circular Source Coordinates Projection:				Release Height AGL (ft)	Radius of Area (ft)	Distance To Nearest Property Boundary (ft)
		UTM E (m)	UTM N (m)	Lat (°N)	Long (°W)			

J. AREA POLY SOURCE DATA

Emission Point ID	Description/Name	Area Poly Source Coordinates Projection:		Release Height AGL (ft)	Number of Vertices
		UTM E (m)	UTM N (m)		

K. OPEN PIT SOURCE DATA

Emission Point ID	Description/Name	Open Pit Source Coordinates Projection:		Release Height AGL (ft)	Easterly Length (ft)	Northerly Length (ft)	Volume (ft^3)	Angle From North (°)
		UTM E (m)	UTM N (m)					

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Bureau of Air Quality
Emission Point Information

L. EMISSION RATES						
Emission Point ID	Pollutant Name	CAS #	Emission Rate (lb/hr)	Same as Permitted (1)	Controlled or Uncontrolled	Averaging Period
				☐ Yes ☐ No		
				☐ Yes ☐ No		
				☐ Yes ☐ No		
				☐ Yes ☐ No		
				☐ Yes ☐ No		
				☐ Yes ☐ No		
				☐ Yes ☐ No		
				☐ Yes ☐ No		
				☐ Yes ☐ No		
				☐ Yes ☐ No		

(1) Any difference between the rates used for permitting and the air compliance demonstration must be explained in the application report.

APPENDIX B - EMISSIONS CALCULATIONS - PSD APPLICABILITY

PUBLIC Emissions Calculations - Netting Analysis For Permitting

Emission Unit	Basis	Production amount	Production UOM	VOC (as VOC) factor lb/UOM	VOC (as VOC) emissions tpy	CO factor lb/UOM	CO emissions tpy	NO_x factor lb/UOM	NO_x emissions tpy
BASELINE ACTUAL EMISSIONS (BAE) - JULY 2010 through JUNE 2012									
Kraft Mill NCG System[A]	Modified	[redacted]	ADTP/day	[redacted]	133.59	[redacted]	20.18	[redacted]	199.12
Kraft Mill Bleach Plant[B]	Retired	[redacted]	ADTP/day	[redacted]	83.80	[redacted]	211.33		
ClO2 Plant[B]	Retired	[redacted]	ton/day	[redacted]	0.32				
Methanol Tank[B]	Retired				1.75				
No. 1 Paper Machine - Coated Paper[B]	Retired	[redacted]	ADTFP/day	[redacted]	32.77				
No. 2 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day	[redacted]	26.01				
No. 2 Paper Machine - Brown Paper[C,D]	Modified	[redacted]	ADTFP/day	[redacted]	0.00				
No. 3 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day	[redacted]	53.96				
No. 3 Paper Machine - Linerboard[C,D]	Modified	[redacted]	ADTFP/day	[redacted]	0.00				
Pulp Dryer - Bleached[B]	Modified	[redacted]	ADTFP/day	[redacted]	23.18				
Pulp Dryer - Unbleached[C,D]	Modified	[redacted]	ADTFP/day	[redacted]	0.00				
No. 1 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	1.13	[redacted]	8.71	[redacted]	7.89
No. 2 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	1.78	[redacted]	10.85	[redacted]	12.96
No. 3 On-Machine Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	1.81	[redacted]	11.67	[redacted]	13.18
Starch Silos[B]	Retired								
TMP[B]	Retired	[redacted]	ADTP/day	[redacted]	190.24				
TMP Bleaching[B]	Retired	[redacted]	ADTP/day	[redacted]	3.51				
Woodyard[B]	affected	[redacted]	Tons/day	[redacted]	4.14				
Power Boiler - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.21	[redacted]	1.29	[redacted]	4.27
Power Boiler - No. 6 Oil[B]	Retired	[redacted]	1,000 gal/day	[redacted]	1.04	[redacted]	2.74	[redacted]	25.73
Wastewater System[F]	Modified	[redacted]	ADTP/day	[redacted]	521.52				
TOTAL BASELINE EMISSIONS					1,027.2		264.2		263.3
PROJECTED ACTUAL EMISSIONS (PAE)									
Kraft Mill NCG System[A]	Modified	[redacted]	ADTP/day	[redacted]	12.58	[redacted]	0.00	[redacted]	0.00
Kraft Mill Bleach Plant[B]	Retired	[redacted]	ADTP/day	[redacted]	0.00	[redacted]	0.00		
ClO2 Plant[B]	Retired	[redacted]	ton/day	[redacted]	0.08				
Methanol Tank[B]	Retired				0.00				
No. 1 Paper Machine - Coated Paper[B]	Retired	[redacted]	ADTFP/day	[redacted]	0.00				
No. 2 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day	[redacted]	0.00				
No. 2 Paper Machine - Brown Paper[C,D,E]	Modified	[redacted]	ADTFP/day	[redacted]	14.78				
No. 3 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day	[redacted]	0.00				
No. 3 Paper Machine - Linerboard[C,D,E]	Modified	[redacted]	ADTFP/day	[redacted]	345.11				
Pulp Dryer - Bleached[B]	Modified	[redacted]	ADTFP/day	[redacted]	0.00				
Pulp Dryer - Unbleached[C,D,E]	Modified	[redacted]	ADTFP/day	[redacted]	93.40				
No. 1 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0.00	[redacted]	0.00
No. 2 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0.00	[redacted]	0.00
No. 3 On-Machine Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0.00	[redacted]	0.00
Starch Silos[B]	Retired								
TMP[B]	Retired	[redacted]	ADTP/day	[redacted]	0.00				
TMP Bleaching[B]	Retired	[redacted]	ADTP/day	[redacted]	0.00				
Woodyard[B]	affected	[redacted]	Tons/day	[redacted]	4.21				
Power Boiler - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0.00	[redacted]	0.00
Power Boiler - No. 6 Oil[B]	Retired	[redacted]	1,000 gal/day	[redacted]	0.00	[redacted]	0.00	[redacted]	0.00
Wastewater System[F]	Modified	[redacted]	ADTP/day	[redacted]	592.56				
TOTAL PROJECTED EMISSIONS					1,066.7		0.0		0.0
NSR APPLICABILITY - BAE-to-PAE									
TOTAL BASELINE EMISSIONS					1,027.2		264.2		263.2
TOTAL PROJECTED EMISSIONS					1,066.7		0.0		0.0
NET EMISSION INCREASE					39.5		(264.2)		(263.2)
NSR Threshold					40		100		40

[redacted]

PUBLIC Emissions Calculations - Netting Analysis For Permitting

Emission Unit	Basis	Production amount	Production UOM	SO_2 factor lb/UOM	SO_2 emissions tpy	TSP factor lb/UOM	TSP emissions tpy	PM_{10} factor lb/UOM	PM_{10} emissions tpy
BASELINE ACTUAL EMISSIONS (BAE) - JULY 2010 through JUNE 2012									
Kraft Mill NCG System[A]	Modified	[redacted]	ADTP/day	[redacted]	1,876.42				
Kraft Mill Bleach Plant[B]	Retired	[redacted]	ADTP/day						
ClO2 Plant[B]	Retired	[redacted]	ton/day						
Methanol Tank[B]	Retired								
No. 1 Paper Machine - Coated Paper[B]	Retired	[redacted]	ADTFP/day			[redacted]	0.41	[redacted]	0.41
No. 2 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day			[redacted]	0.64	[redacted]	0.64
No. 2 Paper Machine - Brown Paper[C,D]	Modified	[redacted]	ADTP/day			[redacted]	0.00	[redacted]	0.00
No. 3 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day			[redacted]	0.96	[redacted]	0.96
No. 3 Paper Machine - Linerboard[C,D]	Modified	[redacted]	ADTFP/day			[redacted]	0.00	[redacted]	0.00
Pulp Dryer - Bleached[B]	Modified	[redacted]	ADTFP/day			[redacted]	0.67	[redacted]	0.67
Pulp Dryer - Unbleached[C,D]	Modified	[redacted]	ADTFP/day			[redacted]	0.00	[redacted]	0.00
No. 1 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.06	[redacted]	0.15	[redacted]	0.61
No. 2 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.06	[redacted]	0.25	[redacted]	0.98
No. 3 On-Machine Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.06	[redacted]	0.25	[redacted]	1.03
Starch Silos[B]	Retired						0.63		0.51
TMP[B]	Retired	[redacted]	ADTP/day						
TMP Bleaching[B]	Retired	[redacted]	ADTP/day						
Woodyard[B]	affected	[redacted]	Tons/day			[redacted]	93.12	[redacted]	13.52
Power Boiler - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.01	[redacted]	0.03	[redacted]	3.13
Power Boiler - No. 6 Oil[E]	Retired	[redacted]	1,000 gal/day	[redacted]	163.27	[redacted]	11.35	[redacted]	8.89
Wastewater System[F]	Modified	[redacted]	ADTP/day						
TOTAL BASELINE EMISSIONS					2,039.9		105.7		28.3
PROJECTED ACTUAL EMISSIONS (PAE)									
Kraft Mill NCG System[A]	Modified	[redacted]	ADTP/day	[redacted]	777.30				
Kraft Mill Bleach Plant[B]	Retired	[redacted]	ADTP/day						
ClO2 Plant[B]	Retired	[redacted]	ton/day						
Methanol Tank[B]	Retired								
No. 1 Paper Machine - Coated Paper[B]	Retired	[redacted]	ADTFP/day			[redacted]	0.00	[redacted]	0.00
No. 2 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day			[redacted]	0.00	[redacted]	0.00
No. 2 Paper Machine - Brown Paper[C,D,G]	Modified	[redacted]	ADTFP/day			[redacted]	0.05	[redacted]	0.05
No. 3 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day			[redacted]	0.00	[redacted]	0.00
No. 3 Paper Machine - Linerboard[C,D,G]	Modified	[redacted]	ADTFP/day			[redacted]	0.58	[redacted]	0.58
Pulp Dryer - Bleached[B]	Modified	[redacted]	ADTFP/day			[redacted]	0.00	[redacted]	0.00
Pulp Dryer - Unbleached[C,D,G]	Modified	[redacted]	ADTFP/day			[redacted]	0.24	[redacted]	0.24
No. 1 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0.00	[redacted]	0.00
No. 2 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0.00	[redacted]	0.00
No. 3 On-Machine Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0.00	[redacted]	0.00
Starch Silos[B]	Retired						0.00		0.00
TMP[B]	Retired	[redacted]	ADTP/day						
TMP Bleaching[B]	Retired	[redacted]	ADTP/day						
Woodyard[B]	affected	[redacted]	Tons/day			[redacted]	105.00	[redacted]	15.75
Power Boiler - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0.00	[redacted]	0.00
Power Boiler - No. 6 Oil[E]	Retired	[redacted]	1,000 gal/day	[redacted]	0.00	[redacted]	0.00	[redacted]	0.00
Wastewater System[F]	Modified	[redacted]	ADTP/day						
TOTAL PROJECTED EMISSIONS					777.3		106.3		16.9
NSR APPLICABILITY - BAE-to-PAE									
TOTAL BASELINE EMISSIONS					2,039.9		105.7		28.3
TOTAL PROJECTED EMISSIONS					777.3		106.2		16.9
NET EMISSION INCREASE					(1,262.6)		0.5		(11.4)
NSR Threshold					40		25		15

[redacted]

PUBLIC Emissions Calculations - Netting Analysis For Permitting

Emission Unit	Basis	Production amount	Production UOM	$PM_{2.5}$ factor lb/UOM	$PM_{2.5}$ emissions tpy	TRS factor lb/UOM	TRS emissions tpy	H_2S factor lb/UOM	H_2S emissions tpy
BASELINE ACTUAL EMISSIONS (BAE) - JULY 2010 through JUNE 2012									
Kraft Mill NCG System[A]	Modified	[redacted]	ADTP/day			[redacted]	17.34	[redacted]	3.83
Kraft Mill Bleach Plant[B]	Retired	[redacted]	ADTP/day			[redacted]	1.16		
ClO2 Plant[B]	Retired	[redacted]	ton/day						
Methanol Tank[B]	Retired								
No. 1 Paper Machine - Coated Paper[B]	Retired	[redacted]	ADTFP/day	[redacted]	0.41				
No. 2 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day	[redacted]	0.84				
No. 2 Paper Machine - Brown Paper[C,D]	Modified	[redacted]	ADTFP/day	[redacted]	0.00	[redacted]	0.00		
No. 3 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day	[redacted]	0.98				
No. 3 Paper Machine - Linerboard[C,D]	Modified	[redacted]	ADTFP/day	[redacted]	0.00	[redacted]	0.00		
Pulp Dryer - Bleached[B]	Modified	[redacted]	ADTFP/day	[redacted]	0.57	[redacted]	1.15		
Pulp Dryer - Unbleached[C,D]	Modified	[redacted]	ADTFP/day	[redacted]	0.00	[redacted]	0.00		
No. 1 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.81				
No. 2 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.98				
No. 3 On-Machine Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	1.03				
Starch Silos[B]	Retired				0.19				
TMP[B]	Retired	[redacted]	ADTP/day						
TMP Bleaching[B]	Retired	[redacted]	ADTP/day						
Woodyard[B]	affected	[redacted]	Tons/day	[redacted]	0.90				
Power Boiler - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.12				
Power Boiler - No. 6 Oil[E]	Retired	[redacted]	1,000 gal/day	[redacted]	6.70				
Wastewater System[F]	Modified	[redacted]	ADTP/day			[redacted]	127.61	[redacted]	5.83
TOTAL BASELINE EMISSIONS					13.2		147.2		9.7
PROJECTED ACTUAL EMISSIONS (PAE)									
Kraft Mill NCG System[A]	Modified	[redacted]	ADTP/day			[redacted]	7.03	[redacted]	1.90
Kraft Mill Bleach Plant[B]	Retired	[redacted]	ADTP/day			[redacted]	0.00		
ClO2 Plant[B]	Retired	[redacted]	ton/day						
Methanol Tank[B]	Retired								
No. 1 Paper Machine - Coated Paper[B]	Retired	[redacted]	ADTFP/day	[redacted]	0.00				
No. 2 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day	[redacted]	0.00				
No. 2 Paper Machine - Brown Paper[C,D,G]	Modified	[redacted]	ADTFP/day	[redacted]	0.05	[redacted]	0.74		
No. 3 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day	[redacted]	0.00				
No. 3 Paper Machine - Linerboard[C,D,G]	Modified	[redacted]	ADTFP/day	[redacted]	0.66	[redacted]	13.69		
Pulp Dryer - Bleached[B]	Modified	[redacted]	ADTFP/day	[redacted]	0.00	[redacted]	0.00		
Pulp Dryer - Unbleached[C,D,G]	Modified	[redacted]	ADTFP/day	[redacted]	0.24	[redacted]	2.70		
No. 1 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00				
No. 2 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00				
No. 3 On-Machine Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00				
Starch Silos[B]	Retired				0.00				
TMP[B]	Retired	[redacted]	ADTP/day						
TMP Bleaching[B]	Retired	[redacted]	ADTP/day						
Woodyard[B]	affected	[redacted]	Tons/day	[redacted]	1.05				
Power Boiler - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00				
Power Boiler - No. 6 Oil[E]	Retired	[redacted]	1,000 gal/day	[redacted]	0.00				
Wastewater System[F]	Modified	[redacted]	ADTP/day			[redacted]	129.92	[redacted]	9.96
TOTAL PROJECTED EMISSIONS					2.2		154.1		11.9
NSR APPLICABILITY - BAE-to-PAE									
TOTAL BASELINE EMISSIONS					13.2		147.2		9.7
TOTAL PROJECTED EMISSIONS					2.2		154.1		11.9
NET EMISSION INCREASE					(11.0)		6.9		2.2
NSR Threshold					10		10		10

[redacted]

PUBLIC Emissions Calculations - Netting Analysis For Permitting

		Production		LEAD		CO_2e	
Emission Unit	Basis	amount	UOM	factor lb/UOM	emissions tpy	factor lb/UOM	emissions tpy
BASELINE ACTUAL EMISSIONS (BAE) - JULY 2010 through JUNE 2012							
Kraft Mill NCG System[A]	Modified	[redacted]	ADTP/day				
Kraft Mill Bleach Plant[B]	Retired	[redacted]	ADTP/day				
ClO2 Plant[B]	Retired	[redacted]	ton/day				
Methanol Tank[B]	Retired						
No. 1 Paper Machine - Coated Paper[B]	Retired	[redacted]	ADTFP/day				
No. 2 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day				
No. 2 Paper Machine - Brown Paper[C,D]	Modified	[redacted]	ADTFP/day				
No. 3 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day				
No. 3 Paper Machine - Linerboard[C,D]	Modified	[redacted]	ADTFP/day				
Pulp Dryer - Bleached[B]	Modified	[redacted]	ADTFP/day				
Pulp Dryer - Unbleached[C,D]	Modified	[redacted]	ADTFP/day				
No. 1 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	9,368
No. 2 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	15,178
No. 3 On-Machine Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	15,440
Starch Silos[B]	Retired						
TMP[B]	Retired	[redacted]	ADTP/day				
TMP Bleaching[B]	Retired	[redacted]	ADTP/day				
Woodyard[B]	affected	[redacted]	Tons/day				
Power Boiler - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	1,786
Power Boiler - No. 6 Oil[B]	Retired	[redacted]	1,000 gal/day	[redacted]	0.03	[redacted]	13,657
Wastewater System[B]	Modified	[redacted]	ADTP/day				
TOTAL BASELINE EMISSIONS					0.03		55,428
PROJECTED ACTUAL EMISSIONS (PAE)							
Kraft Mill NCG System[A]	Modified	[redacted]	ADTP/day				
Kraft Mill Bleach Plant[B]	Retired	[redacted]	ADTP/day				
ClO2 Plant[B]	Retired	[redacted]	ton/day				
Methanol Tank[B]	Retired						
No. 1 Paper Machine - Coated Paper[B]	Retired	[redacted]	ADTFP/day				
No. 2 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day				
No. 2 Paper Machine - Brown Paper[C,D,E]	Modified	[redacted]	ADTFP/day				
No. 3 Paper Machine - Coated Paper[B]	Modified	[redacted]	ADTFP/day				
No. 3 Paper Machine - Linerboard[C,D,E]	Modified	[redacted]	ADTFP/day				
Pulp Dryer - Bleached[B]	Modified	[redacted]	ADTFP/day				
Pulp Dryer - Unbleached[C,D,E]	Modified	[redacted]	ADTFP/day				
No. 1 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0
No. 2 Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0
No. 3 On-Machine Coater - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0
Starch Silos[B]	Retired						
TMP[B]	Retired	[redacted]	ADTP/day				
TMP Bleaching[B]	Retired	[redacted]	ADTP/day				
Woodyard[B]	affected	[redacted]	Tons/day				
Power Boiler - Natural Gas[B]	Retired	[redacted]	mmBtu/day	[redacted]	0.00	[redacted]	0
Power Boiler - No. 6 Oil[B]	Retired	[redacted]	1,000 gal/day	[redacted]	0.00	[redacted]	0
Wastewater System[F]	Modified	[redacted]	ADTP/day				
TOTAL PROJECTED EMISSIONS					0.00		0
NSR APPLICABILITY - BAE-to-PAE							
TOTAL BASELINE EMISSIONS					0.03		55,428
TOTAL PROJECTED EMISSIONS					0.00		0
NET EMISSION INCREASE					(0.0)		(55,428)
NSR Threshold					0.6		75,000

[redacted]

APPENDIX C - EMISSIONS FACTORS - BLEACHED AND UNBLEACHED PULP PRODUCTION

PUBLIC TAB A - New-Indy Catawba Emission Factors for Incineration of Kraft Mill NCG Gases.

[redacted]

ED_014050_00000011-00057

PUBLIC TAB A - New-Indy Catawba Emission Factors for Incineration of Kraft Mill NCG Gases.

[redacted]

NEW INDY CONTAINERBOARD

PUBLIC TAB F - NCASI Condensate and WWTP Methanol Concentration

[redacted]

TABLE 2 NON-KRAFT WWTP INFLUENT CONCENTRATIONS FOR METHANOL

TYPE OF PULPING	REF	NO. OF MILLS SAMPLED	METHANOL	
			RANGE	AVERAGE
Bleached Sulfite	NCASI 1994a	2	15 to 79	47.4
Semi-Chemical	NCASI 1994a	1		27.1
Deinked Tissue	NCASI*	1		2.7
Deinked Newsprint	NCASI*	1		7.8
Wastepaper, Board	NCASI*	1		1.0
Wastepaper, Corrugated	NCASI*	1	0.8 to 2.1	1.5
Groundwood, Newsprint	NCASI*	1		0.7

*NCASI WWTP Sampling Database – Unpublished

TABLE 3 METHANOL CONTENT OF KRAFT MILL CONDENSATES AND BLEACH PLANT EFFLUENTS (SOFTWOOD AND HARDWOOD)

	NO. OF MILLS SAMPLED	METHANOL, lb/ADTUBP		
		RANGE	MEAN	MEDIAN
Unbleached Kraft Mill Condensates[1]	3	11.3 to 16.2	13.4	12.7
Bleached Kraft Mill Condensates[1] (including mills with O_2 delignification)	15	16.5 to 27.0	21.1	21.4
Bleach Plant Effluents[2]	lab study	4.0 to 6.5	5.0	4.9

[1] includes all pulp mill and evaporator area condensates (NCASI 1995)
[2] includes methanol that entered the bleach plant with pulp or the ClO_2 liquor and methanol generated during bleaching (NCASI 1994b)

3.3 Otherwise use the toxic chemical

This would be the sum of all the methanol used at the manufacturing site. A 10,000 lb/yr reporting threshold applies for this category. Ancillary or other uses of methanol could include methanol used in printing inks, solvents, antifreeze, and methanol-based ClO_2 generation processes.

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1 ___ **(Enter two-digit code from instruction package.)**

At any given time, methanol may be present at the mill-site in various stored liquid streams which include purchased mixtures containing methanol, black liquors stored in tanks, and pulp storage vats. Methanol may also be present in trace quantities in wastewater treatment plants. For a kraft mill, in the absence of mill-specific information, the estimates given in Table 4 for methanol concentration in liquids may be used. The wastewater treatment plant (WWTP) influent methanol concentrations at several non-kraft pulp and paper producing facilities were summarized in Table 2. The WWTP

PUBLIC TAB G - NCASI WWTP H2S Concentration

[redacted]

TABLE 3 KRAFT WWTP INFLUENT CONCENTRATIONS OF HYDROGEN SULFIDE (NCASI WWTP Sampling Database - Unpublished)

TYPE OF PULPING	NO. OF MILLS SAMPLED	CONCENTRATION, ppb	
		Range	Average
Bleached Kraft	12	71 – 15,700	4520
Unbleached Kraft	7	617 - 4306	2402
Sulfite + Recycle	2	238 - 1287	763
TMP + Recycle	2	5039 - 5320	5180
Hard-piped Condensates	8	12,100 – 102,825	69,000

Sample Calculation for Threshold Determination:

A kraft mill produces 1100 ADTUBP/day. At this mill, brown stock washer vent gases are collected and treated in an incineration device. The pulping process generates 3300 lb BLS/ADTUBP which is fired in DCE furnaces and 0.275 ton CaO is regenerated in the lime kiln per ADTUBP. The mill operates a 500 x 10^6 Btu/hr wood-fired boiler and a 50 tpd tall oil plant. The final product is 1000 tons of bleached paper per day. The mill operates all 365 days/yr and discharges 30 x 10^6 gpd from the pulp mill.

Consider two cases of condensate collection and handling. In Case 1, the mill operates a steam stripper. In Case 2, the mill "hard-pipes" a 1 MGD of its condensates to the AST system. Assume this mill does not have its own condensate hydrogen sulfide data and uses the mean value of 69.0 mg/L of hydrogen sulfide shown in Table 3 as being present in all condensates at the mill. For Case 1, the mill with a steam stripper, the condensate hydrogen sulfide is divided between the amount in the stripper off-gases and the amount sewered to the WWTP. For Cases 2 and 3, all of the condensate will be sewered to the WWTP.

Table 4 shows the amounts of hydrogen sulfide emitted from several major operations at this example mill as estimated using factors given in Table 1. Table 3 also shows the amount of hydrogen sulfide manufactured and present in (1) in uncontrolled NCGs and (2) in WWTP untreated effluents. For this example mill, based on the total amount of hydrogen sulfide manufactured and either emitted, present in strong liquor or released to the WWTP, a SARA 313 report does have to be filed as the amount exceeds 25,000 lb/yr.

PUBLIC TAB H - NCASI Methanol and TRS in LVHC GASES

[redacted]

NCASI

February 20, 2019

TO: Bob Tourville, New Indy Containerboard

FROM: Zach Emerson, NCASI

SUBJECT: Methanol and TRS Content of LVHCs at Bleached and Unbleached Chemical Pulp Mills

At your request, NCASI staff evaluated the underlying emissions data in the NCASI Pulp and Paper Air Toxics Database (2018 release version). The goal was to determine if the factors for methanol and total reduced sulfur (TRS) in Kraft Mill low volume high concentration gases (LVHCs, i.e. digester + evaporator noncondensible gases (NCGs)) differed significantly between bleached and unbleached pulp mills.

Background

Methanol and TRS are lignin degradation compounds generated in the digester during Kraft pulping. The extent of formation varies and depends upon several process factors, including cooking time, chemical use and temperature. It is expected that a black liquor and pulp mixture cooked to a higher Kappa number (i.e., more residual lignin and cooked less aggressively) will contain lower amounts of methanol and TRS compounds. As bleaching-grade pulps are typically cooked to a lower Kappa number, the resulting digester gases, black liquor and pulp would be expected to have higher amounts of methanol and TRS compounds than for unbleached pulp manufacturing.

Given TRS and methanol masses in LVHCs are attributable to their presence in digester off-gases and in weak liquor, it is reasonable to expect that the LVHC content of these chemicals would be higher at bleached pulp mills than at unbleached pulp mills. Below are the results of an analysis of NCASI information that examines this hypothesis.

Analysis

The Master Summary Table of the NCASI Air Toxics Database (2018 release version) presents various NCG loading factors for methanol and for TRS; however, it combines the LVHC measurements at bleached and unbleached mills into a single dataset to calculate an average. Individual test event data are available in the Detailed Sheets of the database. This database compiles emissions information for many compounds at many process units and is made available to NCASI members on the NCASI Website. Information from the following file was used in this analysis:

- Table A6a and A6b – Kraft Pulp Mill NCGs (September 2018).xls

The underlying reports for each facility were reviewed to determine if the facility manufactured bleached or unbleached pulp. The data was then segregated into the following four sets:

- LVHCs at Bleached Pulp Mills – Methanol
- LVHCs at Unbleached Pulp Mills – Methanol
- LVHCs at Bleached Pulp Mills – TRS
- LVHCs at Unbleached Pulp Mills – TRS

Note there were five LVHC data points for which there is no hydrogen sulfide data; these facilities were excluded from the analysis, as TRS could not be estimated. There was one TRS outlier measurement for both unbleached and bleached LVHCs, as well.

Table 1 presents calculated methanol factors for LVHCs at bleached and unbleached facilities. A total of 14 LVHCs at bleached mills and 5 LVHCs at unbleached mills are included.

Table 1: Comparison of Methanol LVHC Factors at Bleached and Unbleached Facilities

Methanol	Mass Load Factor (lb of Methanol/ADTCBP)	
	At Bleached Facilities	At Unbleached Facilities
Mean	0.68	0.05
Median	0.19	0.16
Standard Deviation	1.1	0.04
Count	14	5
Range	<0.01 to 3.3	<0.01 to 0.11

The mean and median methanol emission factors for LVHCs at bleached and unbleached facilities are quite different, with the mean bleached methanol factor being higher than the mean unbleached factor.

Table 2 presents calculated TRS factors for LVHCs at bleached and unbleached facilities. A total of 7 LVHCs at bleached mills and 4 LVHCs at unbleached mills are included.

Table 2: Comparison of TRS LVHC Factors at Bleached and Unbleached Facilities

Total Reduced Sulfur	Mass Load Factor (lb of S/ADTUBP)	
	At Bleached Facilities	At Unbleached Facilities
Mean	1.2	0.81
Median	1.5	0.84
Standard Deviation	1.1	0.69
Count	7	4
Range	0.06 to 3.3	0.28 to 1.7

The mean and median TRS factors for bleached and unbleached LVHCs are also different, with the mean bleached LVHC TRS mass load factor being higher than the mean unbleached LVHC factor.

The results of this analysis support the hypothesis that the mass loads of methanol and TRS in low volume high concentration gases are lower at unbleached pulp mills than at bleached pulp mills. NCASI will evaluate making this change in the NCASI Air Toxics Database.

If you have any questions concerning this analysis, please feel free to contact me.

PUBLIC TAB I - NCASI Condensate Nitrogen Concentration - NCASI TB 802 - Southern Kraft Mill Condensates - mixed Pine/Hardwood

[redacted]

Exhibit 2

Baird, Mandalas, Brockstedt
1413 Savannah Road, Suite 1
Lewes, Delaware
19958

September 26, 2021

Attn: Mr. Chase Brockstedt

Re: New-Indy Catawba Mill: Preliminary Report on Causes of and Solutions for Odors

Dear Mr. Brockstedt,

This letter is a preliminary report on the cause of the reported noxious odors emitted by the New-Indy Catawba wastewater treatment plant (WWTP) since February 2021 and what can be done to immediately reduce and eventually eliminate the conditions at the WWTP that cause the malodorous and toxic emissions.

This letter report is my evaluation as an expert in wastewater treatment and residuals (sludge) handling of the wastewater treatment history, operations, and practices at the New-Indy plant and its impact on the local environment. I have formed my opinions, analyses, and conclusions with a reasonable degree of engineering probability after reviewing the references listed in the attachment. My opinions and conclusions are also based on my education, experience, and training in the environmental, engineering, and science of the treatment of pulp and paper mill wastewater, discharge of treated effluent, disposal of residual sludges and floatables, off-gas releases, and my knowledge of related regulations, standards of practice, and public health requirements.

All opinions expressed herein are based on the information received and documents currently available, with the right to supplement and/or modify the opinions as more information is discovered or becomes available.

Qualifications:

My education and my entire working career have been dedicated exclusively to wastewater and residuals treatment including treatment plant engineering and design, plant operations, treated effluent discharge, and residuals disposal and management. My Bachelor of Environmental Engineering and Master of Water Quality Engineering both came from Vanderbilt University with an emphasis on wastewater treatment.

After graduate school I worked as an Engineering Consultant evaluating wastewater treatment systems to: assess performance capability; determine reasons for failure and methods of cure; determine performance efficiency and improve treatment where possible. In 1981 I started my own Environmental Technology company and introduced new processes to the field. My 17 patents were the basis of design for over 700 WWTP's located in over 17 countries, treating many kinds of industrial wastewater, sanitary wastewater, and associated residuals.

I have personally designed and provided process and mechanical troubleshooting and problem solving for hundreds of WWTPs, including nine pulp & paper mills. I spent five years as a Vice President of Technology for two of the largest wastewater treatment companies in the world: U.S. Filter (now Evoqua), and Veolia Water. The past 19 years I have operated my own consulting firm specializing in all aspects of wastewater treatment.

Introduction

It has been well established in documents available from the South Carolina Department of Health and Environmental Control (DHEC) that the New-Indy Catawba WWTP was ineffective at sulfide removal and in a state of poor operation most of the time since New-Indy converted the mill operation from white paper to linerboard on February 1, 2021. Since that startup, the mill and WWTP have routinely released offensive and dangerous gases to the ambient air and unfortunate downwind residents. In fact, New-Indy, DHEC, and the EPA have each documented excessive concentrations of hydrogen sulfide (H_2S). As shown below, large amounts of other associated gases with strong odors and documented toxicities also have also released to the surrounding community – and it is continuing.

Among many other documents I have reviewed is New-Indy's Corrective Action Plan (CAP), revision 2, dated July 12, 2021. The CAP describes (in New-Indy's view) the cause of this massive and sustained chemical release and the actions and upgrades required to fix the problem. While all the recommended improvements in that report are necessary, they are insufficient to fix and prevent a repeat of the odor and toxic emission problems emanating from the New-Indy WWTP that plagues the community. There remain other essential improvements and additional facilities that are necessary to eliminate the release of the malodorous and toxic emissions and to ensure they are never released to the community again. The multiple causes of this preventable failure are discussed below, followed by a discussion of the additional work required to truly fix the problem. Finally, the Appendix includes an analysis of the sulfide emissions model used by New-Indy which significantly underestimated the increase in hydrogen sulfide and total reduced sulfide emissions in its construction permit application and helped justify its request to shut down the steam stripper.

Background

New-Indy's process of turning wood into paper or linerboard (used in cardboard boxes), requires chemicals and processes that create noxious, unhealthy off-gases, and heavily contaminated wastewater. New-Indy uses the "kraft" process to digest the wood pulp, and that process uses strong sulfide chemicals that produce a liquid waste known as "foul condensate." The foul condensate contains volatile chemical compounds that have offensive odors and are toxic at elevated concentrations. The various sulfur-containing chemicals in the foul condensate are referred to as "Total Reduced Sulfides" (TRS), the most recognizable of which is hydrogen sulfide – commonly described as "the rotten-egg smell." However, there are other noxious and toxic reduced sulfur compounds in New-Indy's foul condensate, including methyl mercaptan, dimethyl sulfide, dimethyl disulfide, in addition to methanol and other volatile compounds, that are being emitted from the WWTP to the ambient air and impacting the surrounding communities. These chemicals generally have quite low odor thresholds and can be toxic at low concentrations. And while hydrogen sulfide is generally singled out for measurement, it is only an indicator of the combined TRS concentration. At New-Indy, the amount of TRS emitted to the ambient air has been estimated by New-Indy's consultants to be some ten times the hydrogen sulfide level - thus the source of odors and potential toxicity is much greater than indicated by the level of H_2S being monitored alone at the mill and in the surrounding communities.

Unfortunately, the release of excessive amounts of TRS from New-Indy's WWTP was foreseeable and could have been (and now can be) prevented but for a series of incomprehensible errors in fundamental wastewater treatment principles. New-Indy instituted a complicated conversion in the manufacturing process (from white paper to brown linerboard) and started up the new process while eliminating a critical step (steam stripping) in the TRS treatment process inside the mill. At the same time, New-Indy *also* was performing out-of-service maintenance on the critical Primary Clarifier in the WWTP which caused a radical reduction in the treatment capacity of the WWTP. Despite these mistakes, New-Indy ran the mill at or near full capacity – even *after* it lost control of the WWTP and began releasing huge amounts of offensive and dangerous off-gases which in turn caused tens of thousands of complaints from residents living as far as 30 miles from the mill.

Eight months after startup of the new linerboard process, New-Indy is unable to treat all the foul condensate with steam stripping inside the mill and continues to discharge several hundred thousand gallons of the sulfide-laden waste to the WWTP every day. The WWTP remains in such a poor state of operation that it continues to release TRS to the ambient air and the surrounding communities. New-Indy's failure to properly maintain the WWTP is likely causing the release of additional TRS emissions as septic solids in ponds are being removed with heavy equipment and sludge is being managed on-site. As a result, the odorous and toxic emissions continue, with residents complaining of burning eyes and throats, nosebleeds, headaches, and other symptoms. The following discusses what happened and what must be done to prevent it from happening again.

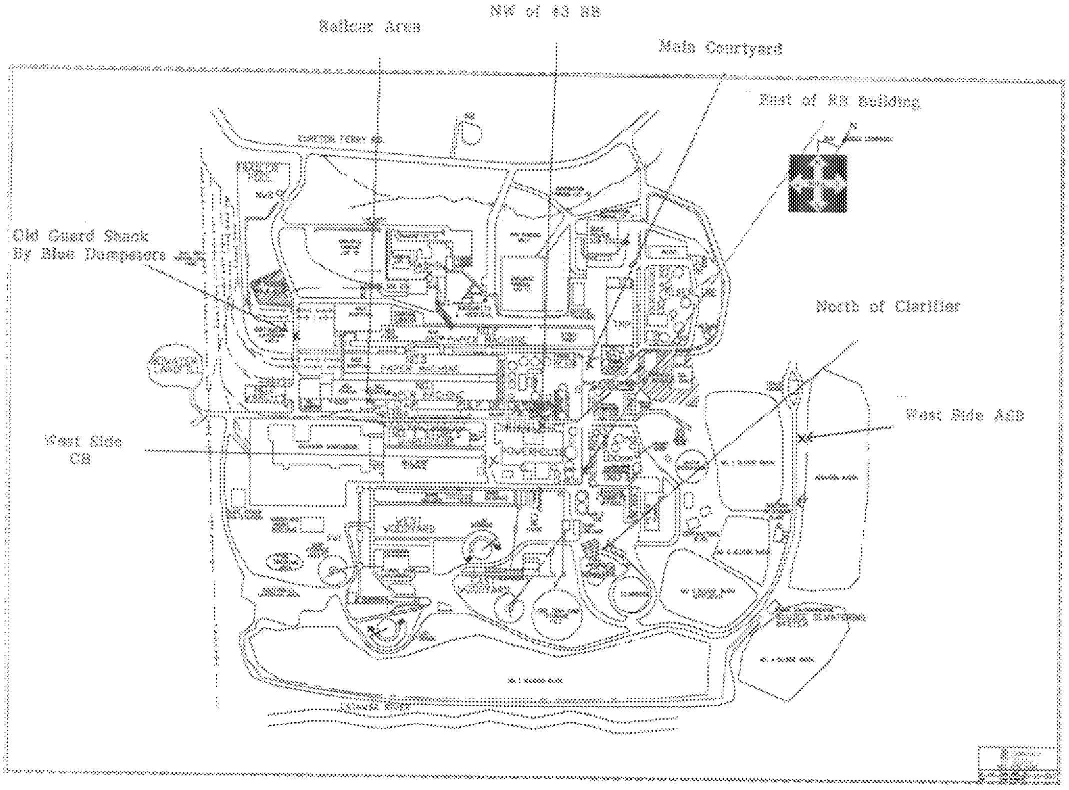
Discussion

Below, Figure 1 is an aerial view of the New-Indy property showing the mill and the wastewater treatment lagoons (picture from Google). Figure 2 is a schematic that shows the layout of the mill and the WWTP processes as seen from plan view, from New-Indy's Corrective Action Plan, Rev. 2 (CAP). According to the CAP: *"the New-Indy mill is comprised of seven (7) major operations and process areas: the woodyard, kraft pulp mill, paper machine, chemical recovery process, utilities, waste treatment, and miscellaneous sources"*. This is a huge and complex series of interdependent operations.

Figure 1. New-Indy Catawba Mill and WWTP (Google)

ED_014050_00000011-00066

Figure 2. New-Indy Mill and WWTP Schematic



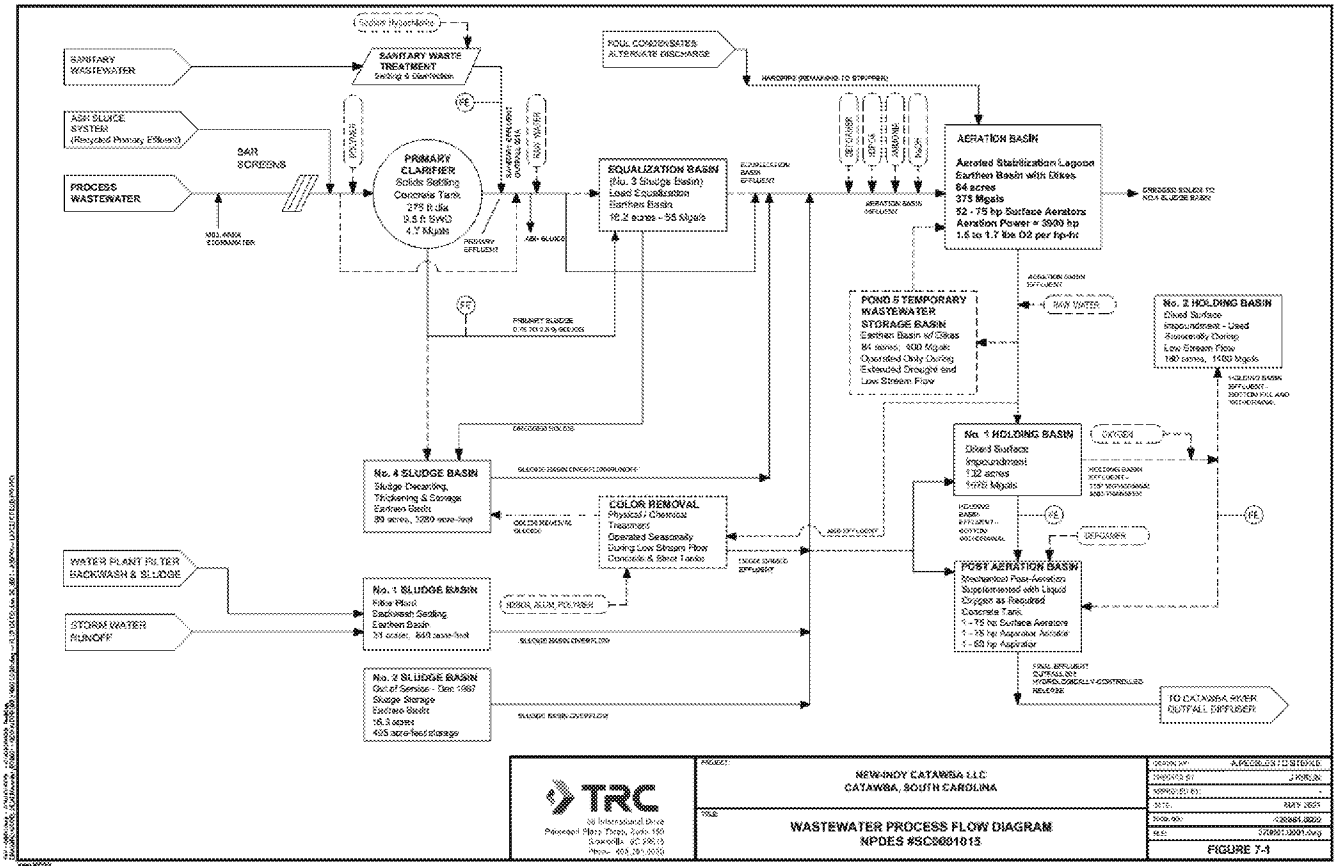
The Wastewater Treatment Process

To understand how the wastewater treatment process failed and released TRS to the surrounding communities, it is necessary to understand how it is supposed to work. This description of the general WWTP function is from New Indy's CAP:

> **"The Wastewater Treatment System is designed to collect all of the wastewaters from the mill, remove settleable solids, and biologically treat the dissolved organics. Most of the wastewater collects within the mill sewers. The sewers gravity flow to the primary clarifier. The clarifier allows solids to settle to the bottom and be removed and clarified water to overflow to either the equalization (EQ) basin or directly to the aerated stabilization basin (ASB). The solids from the primary clarifier, otherwise known as "sludge," are pumped to the EQ basin that allows additional separation (thickening) of the solids. Decant from the EQ basin flows into the aeration basin along with clarified wastewater from the clarifier. The condensate hard pipe discharges below the liquid surface of the ASB to biologically treat contaminants in the foul condensate. The treated wastewater from the aeration basin flows into holding ponds. From the holding ponds, the treated wastewater flows by gravity through a post-aeration basin where mechanical aerators increase the dissolved oxygen content of the**

wastewater prior to discharge into a receiving stream." Figure 3 gives some details on the WWTP units (from New-Indy's CAP).

Figure 3. New-Indy WWTP Details



Each of these units likely contributed to the generation of odors as follows:

1. Primary Clarifier: This round tank is 275-feet in diameter, 9.5 feet deep, and holds 4.7 million gallons. A picture of the surface of the clarifier (from the DHEC sire inspection report) is shown in Figure 4. As noted above, its purpose is to receive the wastewater from the mill and settle out the pulp fibers, grit, minerals etc. so that these inert objects do not enter the rest of the wastewater plant and take up useful space. It thus provides critical protection to the parts of the WWTP that remove pollutants from the wastewater. It normally fulfills this function adequately, with little room for error. However, the problems encountered by New-Indy during the startup of the linerboard process resulted in vast quantities of pulp being sent to the WWTP with the wastewater.

Figure 4. Surface of Primary Clarifier

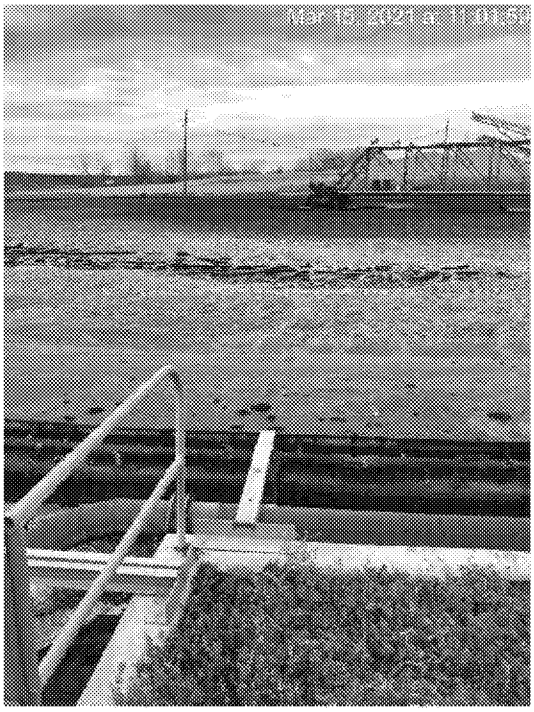


Photo ID: 2
Date/Time: 3/15/2021; 1101
Description: Primary clarifier with ash layer

This also happened to be the time when New-Indy had taken the Clarifier out of service for extensive repairs. Huge amounts of wasted pulp, ash and mineral content ended up in the critical Aerated Stabilization Basin (ASB) and settled or floated – reducing the effective volume available in the ASB for removal of pollutants and causing failure of almost half of the critical aerators. EPA inspectors also reported and measured serious odors from and around the clarifier during their site visits in April 2021.

2. Equalization Basin (formerly #3 Sludge Lagoon): This is a 16-acre lagoon that holds 55 million gallons when empty but is filled with the settled solids (sludge) from the Primary Clarifier. Its purpose formerly was to smooth out (equalize) variations in the wastewater flow rate from the mill so that the next phase of treatment could operate more consistently. As an apparent cost-saving measure, the basin function was modified based on construction permit 20098-IW granted in 2017 to receive and thicken the primary clarifier sludge prior to it being dredged over to Sludge Lagoon #4 for permanent disposal. However, the planned removal of thickened sludge has been grossly inadequate, and the lagoon was observed by DHEC in March to be nearly full of accumulated sludge. Further, the flow path of the clarified wastewater is through the sludge-filled Equalization basin – and as of early July 2021, six months after startup, this flow continues to wash useless sludge solids out of the Equalization basin and into the ASB, further reducing treatment capacity. This sentence from New-Indy's Corrective Action Plan is illustrative: *"Over the last several years the (*WWTP*) process flow diagram has changed, most notably as the management of primary clarifier solids and foul condensates has changed."* Those changes included: 1) Abandoning the Steam Stripper that had removed so much odor for so many years, and 2) Sending the Primary Sludge to the Equalization Basin for 'free' dewatering (and failing to keep that sludge out of the ASB influent).

3. Aerated Stabilization Basin (ASB): This 64-acre, 375-million-gallon lagoon is the heart of the WWTP. It is here that naturally occurring microorganisms are meant to be provided with adequate mixing and oxygen to achieve efficient removal of pollutants from the wastewater. The aeration and mixing are normally provided by over fifty 75-HP aerators that float throughout the lagoon. When functioning properly, these aerators provide some 140,000 pounds of oxygen daily. Figure 5a shows what the lagoon looks like when healthy in a Google photo taken in 2005. However, there were three inexplicable failures that occurred while the linerboard process startup was completed:
   a. While the Primary Clarifier was out of service, the mill kept on operating, resulting in tons of sludge and scum solids normally removed by the clarifier being sent to the ASB, and during this time the full wastewater flow rate, normally routed around the Equalization basin, had to be routed through the sludge-filled ASB which washed many more tons of sludge into the ASB.
   b. Large loads of fiber solids were dumped from the mill during a difficult and extended process conversion and startup operation, much of it settled in the ASB.
   c. There was continual and significant erosion of the old Clarifier sludge from the Equalization Basin into the ASB.

   All these failures contributed to a massive buildup of pulp and mineral sludge within the ASB, as shown in Figure 5b, taken from a drone in June 2021. The thickness of this material was such that it caused many critical aerators to fail – they were not designed to pump thick sludge. As these aerators failed, there was less oxygen and mixing available. Over half of them eventually failed. New-Indy explained in CAP#2 that of the 52 aerators installed, only 28 were working before they had removed enough sludge to begin reaching and repairing aerators. Further, so much sludge fed into the ASB that its inherent treatment capacity was significantly reduced due to the loss of both volume and aeration. New-Indy had apparently assumed the ASB would be fully operational to justify shutting down the steam stripper and bypassing all the foul condensate to the ASB. However, multiple aerators failed in the north end of the ASB (Zone 1) where the influent entered, because this is where much of the sludge and pulp solids settled. This is obvious in the photo below. Unfortunately for local residents, this is also where the foul condensate was discharged after bypassing the abandoned steam stripper. With fewer aerators to provide mixing and oxygen, the conditions generated even more odors exacerbated the evaporation of malodorous TRS gases into the ambient air. DHEC inspected the plant in March 2021 in response to the odors and their measurements confirmed that the ASB was severely clogged with sludge and in a severely under-aerated condition – and thus odorous and incapable of performing properly.

   One can get a sense of the scale of New-Indy's WWTP failure by the shear quantities involved: New-Indy estimates the volume of useless solids to be removed from the ASB at between 750,000 – 1,000,000 cubic yards, over half the ASB volume. We do not know how much of this was already deposited prior to 2021, but aerial views of the ASB indicate that a great deal of sludge entered the basin after the process changeover. This is clear from the pictures below: the one on the left shows a healthy ASB in 2005 with all aerators operational and little or no foam or sludge visible; on the right is a photo taken from the opposite end in June 2021. The influent zone in the 2005 picture is on the upper left of the lagoon, and in the recent picture is on the lower right side. The areas of brown show accumulated foam and sludge from the lack of aeration and mixing caused by the failed aerators. Some sludge had accumulated prior to the 2021 failures but aerial views from 2017-2019 confirm that most of the deposit occurred after New-Indy's purchase of the mill. This, combined with the discharge of up to one million gallons per day of foul condensate, has been a major source of the release of malodorous and toxic chemical that has affected local residents so severely.

Figure 5a. Healthy ASB Operation in 2005

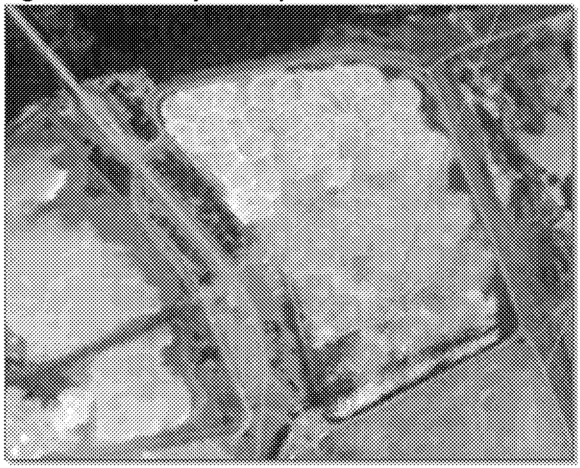
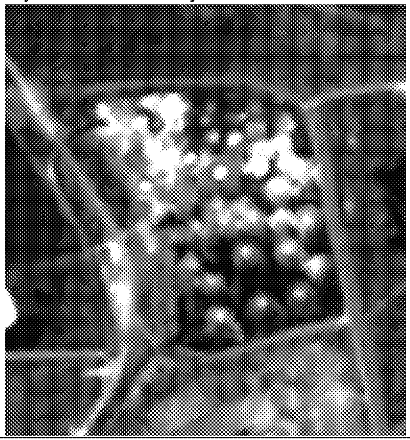


Figure 5b. Severely Damaged ASB Operation in May 2021



4. <u>#1 Holding Pond:</u> This enormous lagoon covers 132 acres and has a capacity of 1,675 million gallons when empty. New-Indy recently stated in their CAP:

   > *"This pond is not intended to provide treatment and only serves as a retaining basin for managing the mill's hydrograph-controlled release NPDES permit that essentially regulates discharge flow based on river flow".*

   However, the lagoon does "provide treatment", and it is treatment for which it was not designed. This holding pond actually serves a dual purpose in that the water entering from the ASB contains solids such as micro-organisms, wood pulp, and various inert minerals that must be settled out before the water can be discharged to the Catawba River. The lagoon is partially filled with settled sludge, and no information on the actual sludge level has been reported in recent documents submitted by New-Indy to DHEC. It is difficult to understand the decision to also use this lagoon as a Clarifier for ASB effluent solids. Prudent design would use a dedicated lagoon as a clarifier, or a dedicated clarifier(s). Even New-Indy admits, per the quote above, that this is not a good application for this lagoon. And yet the pond is used as a clarifier. There is no means to remove these solids short of dredging them out, which could well produce poor effluent that would violate the discharge permit.

   When thousands of pounds of biodegradable solids enter an unaerated lagoon every day, nature will take its course and septic conditions in the accumulated sludge will generate odors and produce more noxious TRS fumes. That apparently is what has happened based on H2S levels measured by EPA during its April 2021 inspection. It was worsened by the exceptional loss of solids during the first half of 2021. New-Indy has responded by pumping in ferric chloride to the influent stream (the discharge from the ASB) in an attempt to neutralize the odorous sulfide compounds in the 132-acre lagoon. New-Indy also placed a couple of floating aerators in the lagoon to help with mixing and aeration. Since there are no reported measurements of H2S or TRS since April, it is unclear how effective these measures have been to reduce H2S and TRS emissions from #1 Holding Pond.

Figure 6. Holding Lagoon # 1

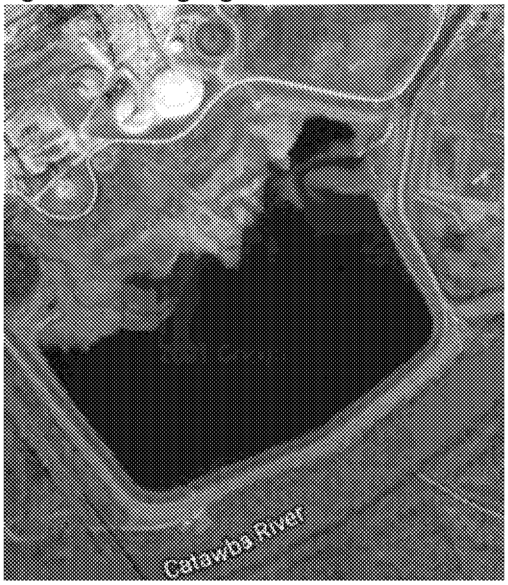


Figure 7. Post Aeration Basin

5. Post Aeration Basin: This tiny concrete basin, shown in the picture on the right, sits on the bank between the south end of #1 Holding Pond and the Catawba River. It can barely be seen in the aerial view of the #1 Holding Lagoon above the 't' in 'Catawba'. This exists as a wide spot in the line to allow some aeration to raise the level of dissolved oxygen in the plant effluent to meet discharge permit requirements.
   EPA inspectors measured high concentrations of hydrogen sulfide here during their April site inspection. New-Indy responded by covering the basin with a tarp and scrubbing the air through a carbon filter to remove TRS fumes. New-Indy then heavily promoted this as a significant victory in the fight against odors, even suggesting that the release of odors would be largely reduced as a result. It was a bizarre claim for such an insignificant source. Water from this basin flows into the Catawba River, and if there is odor here, then the effluent – the supposedly clean water – contains significant concentrations of hydrogen sulfide and likely other forms of total reduced sulfur (TRS) that present a water quality problem.

   Measurements of the hydrogen sulfide concentration in the #1 Holding Pond over the past few months are typically around 2,000 parts per billion. This is significant since sulfides are toxic or inhibitory to aquatic organisms at concentrations above just 2 parts per billion. There is no published data on the sulfide concentration of the final effluent (after the post-aeration basin) because New-Indy is not required by their NPDES permit to measure sulfides even though they should be to protect water quality in the receiving stream. The New-Indy effluent is diluted by approximately 100 times when it discharges into the Catawba River, but that still would leave a sulfide concentration of 20 parts per billion where 2 parts are considered problematic.

6. Wastewater Load**.** The production of paper or linerboard requires a huge amount of water. The amount of water used in the mill is directly proportional to the rate of paper production. In its permit application to convert to the linerboard process, New-Indy stated that changes to the production process for the linerboard conversion would cut the wastewater flow rate in half. However, as shown in Table 1 below, in the first five months of 2019, which was prior to the conversion, the New-Indy discharge monitoring reports to DHEC show the mill discharged an average of 19.7 million gallons per day (MGD) to the river. In 2020 (also prior to the conversion) the average discharge was about 22.2 MGD. Since the conversion

to linerboard, reported by New-Indy to have occurred on Feb. 1, 2021, the average discharge rate to the wastewater treatment plant through June has been 26 MGD. So, either there was no decrease in flow rate, or New-Indy doubled the mill production rate. Possibly a combination of both. New-Indy continued to run at this rate even though the toxic odors were causing so much distress. New-Indy could have elected to reduce mill throughput in order to reduce the pollutant load to the WWTP and thus reduce odor generation to a tolerable level. It appears they chose not to do so.

Table 1. New-Indy Monthly Average Discharge Rate

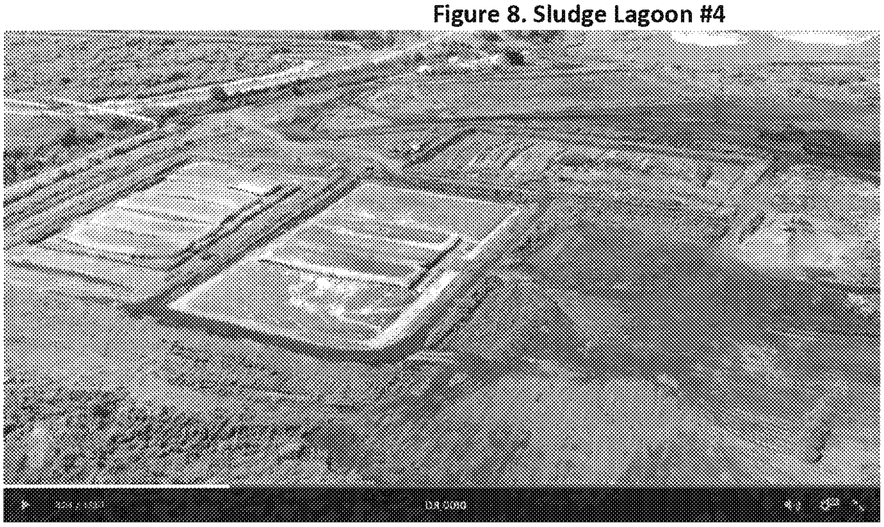
Month	2019	2020	2021*
February	26	24.8	**26**
March	19.2	23.6	**26**
April	18.2	23.7	**25**
May	19	22.6	**27**
June	16.1	16.2	**26**
Average	19.7	22.2	**26**

Data from the monthly discharge reports to DHEC.
* Linerboard process startup Feb 1, 2021; 2021 flow rates are ASB feed flow from New-Indy CAP Rev. 2.

7. Sludge Lagoon #4: This 89-acre lagoon (about 37-feet deep) has been used for multiple purposes:
   a. Sludge Thickening and Dewatering for sludge, floating solids, and foam from the Clarifier, Equalization Basin (#3 Sludge Basin), and the Aerated Stabilization Basin.
   b. Landfill for Dewatered Sludge.

Figure 8 is a picture of Sludge Lagoon #4 taken from a drone in June 2021.

Figure 8. Sludge Lagoon #4



As a landfill for soil and dewatered material, Sludge Lagoon #4 is contaminated with Dioxins, Furans, and/or other toxins. DHEC requires New-Indy to collect and submit biennial monitor well sampling data. This data goes back to 1988 and includes pH, Chloroform, Conductance, Barium, Nitrate, Cadmium, Chromium, Lead, Mercury, Sulfate, TKN (organic nitrogen), Ammonia, TDS (dissolved salts), and Phosphorus. New-Indy sends the lab results to DHEC with a brief description of the results and trends. These do not appear to include results for Dioxins and Furans which have been measured in 1) the soil around the site, 2) the "Legacy Sludge" produced by the mill and WWTP, and 3) sludge, soil, and foam from the various lagoons. The Voluntary Cleanup Oversight Contract (VCOC) signed by New Indy in December 2018 reported that soil and sludge samples from around the mill and WWTP site were contaminated with toxic chemicals including Dioxins and Furans and required sampling for these compounds as appropriate. It further mandated that New-Indy close and cap Sludge Lagoon #4 as a Class 3 landfill (the most rigid closure requirements per Regulation 61-107.19 Part V and S.C. Code Section 44-96-390). DHEC reports and letters indicate that New-Indy has not only been lax in closing this sludge lagoon but intends to continue using it for many years.

As Sludge Lagoon #4 is located immediately adjacent to the Catawba River, it is important to determine whether the lagoon is properly lined on its bottom and sides and sealed so that here is no leakage. Adequate sealing is unlikely, due to the age of the lagoon. If there is leakage of contaminants that are capable of reaching the Catawba River, New-Indy should provide a hydraulic barrier and/or take other remedial actions that protect the river.

Required Actions to Prevent Future Occurrences vs New-Indy's Response

1. **Current and Future Effluent Quality.** New-Indy's NPDES discharge permit was issued in 2009 and expired in 2014 and has been administratively extended by DHEC for the past seven years without proposing a new permit. The outdated permit should be updated promptly to account for New-Indy's new production process and additional information and data collected as discussed above to assess performance and the need for upgrades. For example, New-Indy should be required to add "Total Reduced Sulfides" to its monitoring requirements for both air and water due to its toxic nature. Further, it is not clear why New-Indy is allowed to discharge many times the pollutants allowed for most municipal WWTPs. New-Indy is allowed, for example, to discharge some 100 mg/l (parts per million) of BOD (organic contaminants) and approximately 200 mg/l of TSS (total suspended solids). Municipal wastewater dischargers are typically required to discharge less than 30 mg/l of BOD or TSS and less than 1.0 mg/l of Ammonia.

2. **Wastewater Treatment Plant Units:** The many failures with New-Indy's process switchover have demonstrated that this mill must not continue to operate with a single train of wastewater treatment units. The failures of this system occurred because there was no spare capacity and no parallel treatment units to accommodate a significant upset condition. Most WWTP's in this country are required to have at least two oversized parallel treatment trains, so that when (not if) a unit fails, or must be removed from service for maintenance, the parallel unit can take up the slack for a significant length of time to allow repair/maintenance/cleanup of the offline unit(s). New-Indy should be required to make the following modifications and additions to their Catawba Mill WWTP in order to protect the community and the receiving waters from extended WWTP failures such as presently exist.

    a. **Steam Stripper.** DHEC has reported this stripper could treat about half of the foul condensate. The decision to remove the steam stripper from service contributed significantly to the release of malodorous and dangerous chemicals. New-Indy should install a second steam stripper of sufficient capacity to treat all foul condensate so that there is, with the other WWTP additions and modifications described below, much greater assurance of a similar failure not happening again. This would also allow a stripper to be removed from service for maintenance without the likelihood of additional malodorous and toxic chemicals being emitted from the WWTP. New-Indy's status reports to DHEC indicate that the existing stripper has already been removed from service twice for maintenance in the past few months. New-Indy's Corrective Action Plan makes no mention of increasing steam stripper capacity which is an essential improvement needed to prevent the ongoing and future H_2S and TRS emissions to the surrounding communities.

    b. **Primary Clarification.** The decision to take the clarifier offline for service was apparently necessary; the decision to commence full-scale production without a functioning clarifier was a major contributor to the overall failure of the WWTP. As stated in New-Indy's O&M Manual, operation of the single Clarifier requires "maintaining a fine balance" in order to have satisfactory performance. This is an accident waiting to happen given the amount of fiber and other solids in the wastewater generated by the mill. A second, and perhaps a third (depending on size) clarifier would: 1) provide greatly simplified and thus more reliable operation with more consistent results; 2) provide capacity to readily handle future spills, failures, and mill upsets; and 3) help greatly to ensure that the WWTP's gross failure never happens again. Primary Clarification is the process that protects the entire rest of the treatment process – it absolutely must be robust. Right now, this plant is one accident, one major equipment failure or maintenance event away from another crippled WWTP. New-Indy should be required to install at least a second 275-ft diameter Primary Clarifier, and really should have a third primary clarifier due to the potential for another massive and sustained loss of pulp. Primary Clarification has proven to be critical to the successful operation of the WWTP. It is essential to have industry standard spare capacity for unexpected events and for maintenance. This will contribute greatly to the success of future operation. However, New Indy's Corrective Action Plan does not include any additional clarification capacity.

c. **Equalization Basin.** New-Indy should separate the influent wastewater flow from the thickening of Clarifier sludge. There can be no path back into the WWTP for the wasted Clarifier sludge. This lagoon must either be internally diked to permanently separate the two streams, or the sludge should be sent to and thickened in Sludge Lagoon #4 as was previously done. Further, this lagoon must be brought up to current standards by being properly dredged and then lined with a leak-proof geo-polymer liner to prevent contamination of the groundwater. New-Indy stated in its Corrective Action Plan that it will continue to remove sludge from the basin but has not indicated it will cease sending sludge from the clarifier or line the Equalization Basin.

d. **Aerated Stabilization Basin.** The ASB must be restored to working condition and all aerators placed back into operation. New-Indy and its contractors and consultants have begun this process but are merely seeking to return the WWTP to a functional state. Much more is required to make this WWTP robust and stable in the long term and prevent future failures. The ASB failure was caused by 1) the failure of the single Primary Clarifier, 2) New-Indy's mistake of filling the Equalization Basin with sludge and allowing it to wash into the ASB, 3) the fact that there was no spare capacity, no standby or parallel clarifier or aeration basin to rely upon. The critical ASB process should be duplicated. The Temporary Wastewater Holding Lagoon (Lagoon #5) is adjacent to and already overflow-connected to the ASB. It holds 400 million gallons and the ASB holds 375 million gallons once it is cleaned of sludge. It would be logical and relatively simple to add aeration to Lagoon #5 and then have a 100% standby capacity. This would also help produce an effluent to the Catawba River that was much higher quality than in the past.
It is critical that both lagoons be brought to modern standards and sealed and lined with a geo-polymer liner. This will stop the leaking of pollutants to the groundwater. Lagoon #5 should be dredged and cleaned and lined (if not already), then equipped with aerators and any necessary flow baffles. Then the raw wastewater can be directed to the new ASB #2 while the existing ASB is drained, fully dredged, cleaned, and then lined and sealed. New-Indy and its contractors reportedly have removed much sludge, repaired and replaced some of the aerators, and begun adding chemicals to try and neutralize some of the odors. However, there is no indication in New-Indy's Corrective Action Plan when the current remediation of the ASB will be completed. Nor does the CAP indicate that New-Indy intends to line the existing ASB or add a second ASB to provide backup capacity and improve the effluent being discharged to the Catawba River.

e. **#1 Holding Lagoon.** This lagoon will always generate odors because the 10,000 to 20,000 pounds of solids arriving from the ASB every day will settle out in this lagoon and start to produce odor and reduced sulfides (TRS). That is why over 2 mg/l of Sulfide was being measured in the lagoon many months after startup of the new process, and New-Indy installed aerators and started paying to have sulfide-neutralizing chemicals pumped into the vast lagoon. Even if the odors are normally minimal, they will be excessive whenever septic settled sludge is dredged and removed. The WWTP requires significant diking of this lagoon to separate the ASB effluent solids-settling function from the effluent flow equalization function. Alternatively, installation of two Secondary Clarifiers between the ASB and the Holding Lagoon would provide vastly improved process control ability and would ensure that ASB solids (which include the microbes responsible for removing pollutants) are removed and kept out of the Holding Lagoons entirely. These solids can then be either returned to the ASB to increase efficiency and reliability or be sent to Sludge Lagoon #4 for dewatering and disposal. This capability would give New-Indy WWTP operators the ability to manage and have a measure of control over the WWTP process. They could, when appropriate, decide to increase or decrease the concentration of active and beneficial microbes in the ASB for which they have no such control now. This will guarantee a much cleaner effluent going to the Catawba River, provide much improved operational stability, and virtually eliminate the production of odors from various Holding Lagoons once they are all properly dredged, cleaned, and lined to current standards. New-Indy reports that it is adding oxidizing chemicals to neutralize odors as a temporary measure. However, the Corrective Action Plan does not indicate any other plans to improve performance.

f. **Post-Aeration Basin**. New-Indy has emphasized the importance of this basin for removing odor. Therefore, there should be a second, identical basin with similar equipment. Further, each basin should be equipped with a sulfide monitoring system that controls both the aerators and chemical feed pumps to add oxygen and sulfide-destroying oxidant as necessary. As a temporary measure, New-Indy has covered the basin with a tarpaulin and is scrubbing the off-gas in an attempt to remove at least some of the malodorous TRS. However, the Corrective Action Plan does not indicate any intent to provide any spare capacity or install a sulfide monitoring system.

g. Sludge **Lagoon #4.** It is not clear from the documents reviewed at this time whether this lagoon is leaking. This is especially critical with the presence of dioxin, furans, and other toxic chemicals likely present in the sludge. Sampling has shown toxic contamination as low as 80-ft deep in this 37-ft deep lagoon. There are liners visible in some zones, but their coverage and integrity apparently have not been determined. The entire lagoon should be assessed and made leak-proof. The river should be protected with a groundwater barrier such as a leachate pump-and-treat system if it is not already. New-Indy previously advised DHEC that it would increase the sludge removal rate and cap the sludge lagoon. However, New-Indy recently stated its intent to continue to use the lagoon until it is at full capacity.

h. **Reduce Load to Match Treatment Capability.** As noted above, New-Indy should not be allowed to continue to run the mill above the capacity of its WWTP to adequately treat the quantity of wastewater produced and without releasing malodorous and toxic levels of TRS and other pollutants to the surrounding communities. Wastewater volume and quality is directly related to production rates. Until New-Indy can implement the improvements described above, it should reduce pulp production to limit TRS emissions and achieve a higher quality effluent. New-Indy's Corrective Action Plan makes no mention of this obvious method to immediately reduce odors in the community.

Please let me know if you have any questions concerning the above.

Kenneth L. Norcross
President, Wastewater Experts
Attachment

APPENDIX: Analysis of New-Indy's Permit to Shut Down the Steam Stripper

<u>Analysis of the New-Indy WWTP in 2021 vs. the Assumptions Inherent in NCASI's Simulated Aerated Stabilization Basin Model (Version 4.2) Used to Justify DHEC's Permit # TV- 2440-0005-DF</u>

In 2019, shortly after purchasing the Pulp and Paper Mill on the Catawba River in South Carolina, New-Indy applied for a permit to convert mill operation from the traditional white paper to brown linerboard. As part of that process, New-Indy decided to halt operation of the Foul Condensate Stripper that treats and removes much of the malodorous and toxic reduced sulfur compounds (TRS) typical of such mill wastewater before it is discharged. Instead, the foul condensate was piped directly to the inlet zone of the Aerated Stabilization Basin (ASB) for attempted biodegradation that was not possible due to the poor condition of the ASB.
This modification in operating procedures was approved by DHEC based on the modelling completed by one of New-Indy's consultants using the NCASI (National Council for Air and Stream Improvement) *Simulated Aerated Stabilization Basin Model* (*Version 4.2*) with data from the ASB operation in 2015. We do not have a copy of that particular model run because it was redacted in the New-Indy permit applications but there are a number of assumptions built in to any such model. It was noted in their application that New-Indy expected to reduce the flow and organic load of wastewater by about 50%. However, data indicate that this did not occur. The mill officially started operation with the new process on February 1, 2021. New-Indy's Corrective Action Plan explains what went wrong, as shown below. The conditions of operation New-Indy gave the Consultant to base the NCASI model results upon were utterly corrupted by unplanned errors and failures of operation in the Mill and the Wastewater Treatment Plant (WWTP). Some of these failures were obvious in May 2020 - when New-Indy applied to DHEC to shut down the steam stripper - based on the out of service aerators and foam in the ASB visible on satellite imagery available from that time period.

From p. 7-5 of the CAP Revision #2) (emphasis added for clarity)

> <u>"The increase of foul condensate loading to the ASB through the hard pipe option under the Title V permit and MACT Subpart S appears to have increased the load of both BOD_5 and sulfur compounds.</u> The loading of the anticipated foul condensate and anticipated wastewater from the converted, unbleached manufacturing operations into the ASB was modeled in 2019 utilizing NCASI's Simulated Aerated Stabilization Basin Model (Version 4.2). The ASB parameters in the model were established using the 2015 solids survey results based on the facility's assumption that additional sludge accumulation since 2015 was approximately equal to the amount of sludge that was removed as part of maintenance dredging since that time. The 2019 modeling indicated that the ASB could sufficiently treat the foul condensate and enable the wastewater treatment system and comply with current (and anticipated) NPDES permit requirements. <u>After the conversion and restarting of the mill, however, the thick layer of fiber formed on the basin reducing the aeration capacity of the basin.</u> <u>This reduced aeration capacity and sludge accumulation that has reduced mixing and disruption of the flow path through the basin have hindered the basin's ability to perform as modeled.</u> The two main operational issues in the ASB that pose the potential of causing or contributing to elevated levels of hydrogen sulfide have been the formation of the floating fiber layer and the accumulation of settled solids. "

From New-Indy's Corrective Action Plan, Rev. 2, p2-1:

> "New-Indy was issued Construction Permit #2440-0005-DF on July 23, 2019, in accordance with state and federal air quality regulations and standards, to allow the mill to modify its processes to convert from bleached paper production to brown paper production. The construction permit was revised on May 13, 2020, to allow the mill to hard pipe its condensates to the wastewater treatment plant. 40 CFR 63, Subpart S, allows this hard piping as a compliance option. New-Indy began start-up operations at the mill as an integrated pulp and paper facility manufacturing brown paper on February 1, 2021."

From the same document, p 3-10:

> "The foul condensate treatment system was modified to use the hard piping option to biologically treat the foul condensate in the ASB. This modification was approved by DHEC with permit TV- 2440-0005-DF.

> The hard pipe has no emissions points. The mill is not required by regulation to analyze the foul condensate that is hard piped to the ASB for temperature, pH, or other parameters. Likewise, the mill has not analyzed the foul condensate to determine its consistency or concentration of constituents other than methanol and TRS compounds."

Again, from p. 7-3, New-Indy's explanation of the predominant cause and source of the toxic releases of reduced sulfur compounds (emphasis added for clarity):

> "An aerobic biological treatment system utilizes aeration and bacterial metabolism to convert biodegradable compounds (BOD) in the wastewater into additional bacteria, water, and carbon dioxide, an odorless gas. In the absence of sufficient dissolved oxygen, the bacterial population will shift to a sulfate reducing scenario, where sulfate replaces oxygen as the terminal electron acceptor, with resultant H_2S formation."
>
> "The predominant issues that have hindered aeration and mixing in the ASB have been the formation of the floating layer of fiber and the accumulation of settled solids. Excess fiber loading into the ASB combined with production liquor losses has led to the formation of a thick, floating layer of fiber and covering areas of the early aerated zone. The fiber and liquors losses arose during mill conversion and recommissioning. The floating solids layer contributed to the breakdown of multiple aerators in the front end of the system. This loss of aeration capacity led to a reduction in biological treatment capacity and resulted in reduced aerobic or anaerobic conditions. Sulfate reducing bacteria when present under anaerobic conditions metabolize BOD by utilizing sulfate as a terminal electron acceptor when there is no dissolved oxygen present, thus producing H_2S as a byproduct. The floating solids also represent biodegradable material that dissolve over time, adding additional oxygen demand to the system. The accumulated solids in the ASB have reduced the hydraulic residence time in the basin for treatment and impacted the flow path through the basin. Solids accumulation occurs from solids loading in the influent as well as settling of biomass generated as part of normal biological treatment. The influent loading comes from solids that may not have been removed during the primary clarification process or primary solids that have become re-entrained in wastewater due to the primary clarifier underflow in the EQ basin. The reduced treatment efficiency and less aerated conditions caused by the floating fiber layer and accumulated solids and H_2S production appears to have contributed to elevated concentrations of H_2S in the effluent from the ASB to No. 1 holding pond. No. 1 holding pond retains wastewater prior to undergoing post-treatment aeration in the post-aeration basin. In the post-aeration basin, large surface aerator/mixers aerate the wastewater in a rectangular, concrete basin. This aeration has the potential of releasing hydrogen sulfide that may be in the wastewater. Additionally, the reduced retention time, inoperable aerators, and biodegradable solids (floating sludge) all may have contributed to higher-than-normal soluble BOD levels in the water leaving the ASB and entering the No. 1 holding pond. While the BOD levels of this water met the requirement for discharge to the receiving stream, the additional BOD served as an oxygen demand in the unaerated No. 1 holding pond, which appears to have resulted in additional sulfate reduction and H_2S formation."

The only logical reason for New-Indy to have idled the Steam Stripper was to save money. Excessive releases of malodorous and toxic sulfide air pollutants from the New-Indy WWTP were predictable, and a significant portion of those releases appear to have been the result of this decision to idle the Stripper. The H2S and TRS emissions from the ASB have continued long after New-Indy put the Steam Stripper back into operation because: 1) the existing steam stripper has insufficient capacity to treat all of the foul condensate before hundreds of thousands of gallons per day is dumped into the ASB, and 2) the massive overloading of the ASB with sludge, foam, and organic pollutants (BOD) left large portions of that basin in an anaerobic, low-ORP, sulfide-generating state.

The standard kinetic model used in the industry for prediction of noxious sulfide gas releases from the ASB is published by the National Council for Air and Stream Improvement (NCASI). In their notes on the model (Technical Bulletin No. 1000), NCASI states the following:

1. The model makes relatively accurate predictions as long as the aerated stabilization basin (ASB) operates at similar conditions to the installations used to develop and calibrate this model.
2. The model is based upon basin properties such as pH (acidity). Dissolved Oxygen concentration, and aerator configuration.
3. A sensitivity analysis performed on the model inputs (used to identify which of the ASB operating parameters most affect the release of sulfide gases) indicated that wastewater **pH** and **oxidation-reduction potential (ORP) are critical to model performance, have the greatest effect, by far, on sulfide generation, and thus should be characterized as accurately as possible.**

It is pertinent to consider NCASI's advice on the model and compare the model's requirements to the actual conditions under which the New-Indy WWTP operated for much of 2021 to see if the actual conditions Pass or Fail the requirements:

1. *The Model requires ASB operation to be in a suitable range for pH, Dissolved Oxygen, and aerator configuration, similar to the actual installations upon which the model is based:*
    a. pH: PASSED - The operating pH range of the ASB was within the model's range.
    b. DO: FAILED - The Dissolved Oxygen concentration was critically lower than required by the model.
    c. Aerator Configuration: FAILED - New-Indy's ASB completely failed this requirement due to a massive overloading of the ASB with pulp solids and inert material which caused the loss of 25% to 46% of the critical ASB aeration capacity as well as a large fraction of the useable volume in the ASB.
2. Oxidation-Reduction Potential (ORP): FAILED – Apart from pH, this is the defining, critical, operating parameter for an ASB because it determines which way the chemical reactions will go. If ORP is in the desired range, as for the plants used to calibrate this model (ORP above 50) then the ASB will not generate sulfide gases. If ORP is too low (below -50), then the ASB will generate noxious sulfide gases. This is shown in the chart below from the Water Environment Federation (WEF):

Biochemical activity	Approximate ORP range*
Carbon oxidation (carbonaceous biochemical oxygen demand stabilization)	+50 to +200
Polyphosphate accumulation	+50 to +250
Nitrification	+150 to +350
Denitrification	−50 to +50
Polyphosphate release	−40 to −175
Acid formation	−40 to −200
Sulfide formation	−50 to −250
Methane formation	−200 to −400

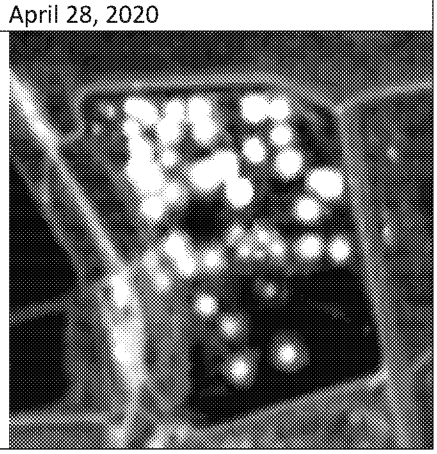
The WWTP completely failed this critical requirement as shown in the table below, with ORP values ranging down to -169 – well into the sulfide generation range. And the ORP value would have been even lower in much of the ASB due to the unprecedented accumulation of sludge and wasted pulp solids. In these vast deposits, it is reasonable to assume the ORP was deeply negative – well under -200.

The table below shows a summary comparison of operating parameters required by the model, and the actual operating conditions in the ASB. Note that precise "Actual" values used by New-Indy's consultants in their predictive modelling are unknown to us, as are some of the actual WWTP operating parameters, due to the redacted appendix in the construction applications. However, some of the "Actual" values shown below are based upon ASB measurements from May 2021 by a New-Indy consultant.)

Critical Operating Parameters for the New-Indy WWTP	Model Assumed Value (Assumed and Approximate)	Actual WWTP Operating Value (Estimated, February – May 2021)	Actual vs. Modelled	Impact on Estimated Performance of Aerated Stabilization Basin (ASB)
Aeration Capacity, # of 75-HP Aerators Operating in ASB	**49 to 52**	**28 to 38**	**54% to 75%**	**Too little aeration generates sulfides, and produces poor effluent to river**
Aeration Characteristics	**3.0 lb O_2/HP-hr**	**2.0 lb O_2/HP-hr**	**33% less**	**Less Oxygen enhances sulfide emissions**
pH	**6.4 to 8.8**	**7 to 10**	**Over 10 times greater at the inlet**	**Should have reduced sulfide emissions near the inlet**
Total ASB Volume	**150 MG**	**55 MG**	**37%**	**Less time to treat waste**
Density of Liquid, lb/ft^3	**62**	**>62**	**Too dense for some Aerators to Pump**	**Over 40% of critical Aerators broke down as a result**
RedOx Potential, ORP	**50 to 100**	**-200 to -30**	**Anaerobic/Anoxic vs Aerobic Operation**	**Actual condition favors formation and release of TRS compounds**
Dissolved Oxygen Concentration	**0.1 to 0.5 mg/l in the front end, 1.5 to 2 mg/l in the rest**	**0 mg/l in the front end; 0.2 to 0.65 in the rest of the ASB**	**Much Too Low**	**Low DO causes Odors and poor effluent to River. Not anticipated.**
Inlet Sulfide Concentration	**0.1 mg/l**	**> 2 mg/l**	**~20 times greater**	**Malodorous release of Hydrogen Sulfide**
Inlet Organic Waste Load	**50% of historical value**	**Appears to be close to historical value**	**Greater**	**Exacerbates low-ORP release of sulfides**
Wastewater Flow Rate	**13 million gallons per day**	**26 million gallons per day**	**200%**	**Half the time to treat the waste load**

As noted above and in the NCASI documentation, healthy and adequate aeration and mixing is a critical component of a well-operated ASB that prevents the release of sulfide emissions: without adequate aeration there will be low ORP in the wastewater and much greater formation and release of sulfides. New-Indy filed for the permit to decommission the steam stripper in May 2020 based on a NCASI sulfide emission model run with data from 2015. However, it appears from the aerial photos below that the operation in the ASB October 2014 was superior to that in both March 2019 and May 2020:

1. In October 2014 the ASB was operating with 48 critical aerators, and there were still 48 aerators operating in March 2019. However, on April 28, 2020, two weeks before the permit change application was filed, there were only 38 aerators in operation, as the picture below shows. There were apparently 26% more aerators in operation in the 2015 and 2019 time periods New-Indy based their emissions model on. Since aeration determines mixing and oxygenation and that in turn determines the operating ORP in the wastewater, and ORP has the greatest effect on sulfide formation and release – more aerators usually mean less sulfide emitted.
2. The superior operation in late 2014 is further indicated by the color of the ASB – note that it was a light brown color – this is a common indicator of healthy biological operation. However, the March 2019 and April 28, 2020, pictures show the color of the ASB was black – this is a classic sign of insufficient oxygen (likely caused by 26% fewer aerators in 2020), poor operation, and/or excessive, old foam. It should be noted that pulp mill wastewater often runs a dark color, but these pictures indicate degraded operating conditions in the ASB in 2019 and 2020 by comparison.
3. The pictures show that in late 2014 there was foam in the influent end (the northeast section of the ASB) where the white aeration patterns are small round spots. However, the rest of the basin had little foam and the aeration patterns were full and wide as indicated by the large white "splash flowers" around each aerator. But in the March 2019 the foam was excessive – drowning the aerators. And in the April 28, 2020, picture the dark foam suppresses the aerator splash throughout most of the basin. This excessive foam causes reduced aeration efficiency since the necessary exchange of air is inhibited by the foam, and it is not seen in ASB photos available to us until after New-Indy bought the site.

October, 2014	March, 2019	April 28, 2020
		

ASB operation in 2021 has, as shown in the above comparison chart, seen every relevant ASB operating parameter outside of the acceptable range required by the model except for the pH. Only the alkaline character of the wastewater – the elevated pH in parts of the ASB - would have the effect of suppressing sulfide emissions. The consistent measurements of sulfide compounds around the ASB are proof that the sulfide suppression effect of the pH was not nearly enough to overcome the very low ORP values that generate sulfide emissions. It is clear from this comparison that the NCASI model was not validly applied to predict the increased emission of reduced sulfides from New-Indy's WWTP.

Norcross Report – Reference List

1. DHEC Catawba River Study 6/28/2021
2. EPA New-Indy Catawba 4.15.21 Inspection Report
3. EPA New-Indy Containerboard Final GMAP
4. New-Indy DHEC Air Quality Inspection Report Feb 2021
5. New-Indy Catawba DHEC Notice of Violation July 2021
6. EPA Order 5132021
7. DHEC Compliance Inspection Report from March 2021 Site Visit
8. DHEC New-Indy Weekly Status Update Reports
9. New-Indy Construction Permit Application 2440-005-DF
10. New-Indy Corrective Action Plans #1 and #2
11. DHEC Responses to Corrective Action Plans
12. New-Indy Voluntary Cleanup Oversight Contract (VCOC)
13. New-Indy Annual NPDES BMP Report
14. New-Indy Biennial Groundwater Monitoring Report 2019
15. DHEC VCOC Site Inspection Report March 2021
16. New-Indy Construction Permit No. 20098-IW
17. New-Indy BAQ Stripper Restart Approval
18. New-Indy Catawba Condensate Collection and Treatment IPT plan
19. New-Indy's Initial Performance Test on the Condensate Collection and Treatment

CatawbaRiverStudy_Final DHEC June 28 2021

EPA New-Indy Catawba 4.15.21 Inspection Report

EPA NewIndy Containerboard FINAL GMAP report_signed.5.5.2021-releasable

New Indy DHEC Air Quality Inspection Report Feb 2021

New Indy Catawba NOAV_EC (July 2021)

New Indy EPA Order 5132021 - A

New Indy EPA Order 5132021

New Indy NPDES Compliance Inspection

New-Indy DHEC Order Weekly Status Update - 061121

New-Indy DHEC Order Weekly Status Update - 061821

New-Indy DHEC Order Weekly Status Update - 062521

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New-Indy Stating Flow Rate to be 50% w Linerboard Conversion

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Nwe-Indy DHEC 6_20_21 Response to CAP 1 w cover

New-Indy DHEC-CAP-report-Rev-2 7-12-2021

New-Indy-Voluntary-DIOXIN-cleanup-oversight-contract

Groundwater Sampling Reports FOIA Documents - SC0001015-Less Compliance & Enforc.

VOCC Inspection by DHEC re Dioxin and Sludge Lagoon #4 Mar-2021

20098-IW Resolute EQ Basin and dewatering improvements (2)

NewIndy_BAQ_StripperRestartApproval

Toxicity of H2S to Fish

Chart of Solids removed from ASB - New-IndyDHEC-CAP-report-Rev-2 - p492

Case for Supersaturation for O2 over Oxidative Chemicals

New-Indy Catawba Condensate Collection and Treatment IPT Plan Update - 5...

Phase I Environmental Assessment Resolute-FP-US-Inc-v-New-Indy-Catawba

O&M plan

New-Indy Catawba LLC Final Operating Procedures - 5-24-21.pdf - AEC Cloud

New-Indy CAP-report 6-15-2021

DHEC Response to NI CAP NICB 6_20_21 Response to CAB w cover

Kraft Process Diagram

Kraft Wood Pulping Process - EPA

Letter Response to Courtney Beltz - 3rd Draft

17509-IW combined files re Industrial Landfill

20098-IW Eq Basin and Sludge Dewatering Changes - Construction Per...

b. Current Wastewater NPDES Permit-2011-01-01

Landfill and Waste Permit 20534-FOIA

New Indy Catawba NOAV_EC (July 2021)

New Indy NPDES Permit SC0001015 fr Riverkeepers

New Indy O&M comments letter

New-Indy Permit Change Request - 2019 Sept - fr Riverkeepers

New-Indy Wastewater FOIA Documents - SC0001015-Less Compliance ...

Exhibit 3

NEW INDY

CONTAINERBOARD

New-Indy Catawba Mill Corrective Action Plan

Revision 2
Submitted: July 12, 2021

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1. EXECUTIVE SUMMARY

New-Indy Catawba LLC (New-Indy) submits this Corrective Action Plan report in response to paragraphs 3, 6 and 7 of the Order issued by the South Carolina Department of Health and Environmental Control (SCDHEC or DHEC) on May 7, 2021. By way of background, until late 2020, New-Indy and its predecessor owners of the mill in Catawba, South Carolina produced bleached paper at the facility. Given the substantial decrease in demand for such paper, the mill was becoming more economically unviable each day. Thus, New-Indy made the decision to convert from producing bleached white paper to unbleached containerboard at the mill. Commencing in spring 2020, the mill replaced the outdated bleached paper-making equipment with state-of-the-art equipment to make lightweight ultra-high strength containerboard and retrained its union workforce to operate and maintain this very sophisticated facility. While the mill began salable production on February 1, 2021, it is still working toward steady-state operations. In late January and February, New-Indy and SCDHEC began receiving complaints from local citizens regarding odors.

At that point, the mill began a concerted effort to identify potential sources of odors and to investigate those potential sources. The mill evaluated its seven (7) major operations and process areas: the woodyard, kraft pulp mill, paper machine, chemical recovery process, utilities, waste treatment, and miscellaneous sources. New-Indy evaluated the seven processes with a series of twelve (12) environmental consultants, including personnel from TRC Companies, Inc. (TRC), ALL4 LLC (ALL4), Weston Solutions, Inc. (Weston), National Council for Air and Stream Improvement (NCASI), Environmental Business Specialists, LLC (EBS), LDX Solutions (LDX), Environmental 360 Solutions, Inc. (E360), Trinity Consultants, Inc. (Trinity), Valmet and Rolf Ryham, SFC Contract Services, Saiia Construction Company and Hazardous Substance & Waste Management Research, Inc. (HSWMR). That evaluation included leak detection and repair (LDAR) evaluation, an ambient air screening evaluation and the installation of ambient air monitors, in addition to a focused evaluation of the wastewater treatment system. Based on the evaluation, the mill and its professionals concluded the wastewater treatment system was the most likely source of reported odors at the mill.

The mill has conducted numerous evaluations and process enhancements at the mill to address the odor issues. As noted above, the mill has engaged at least twelve environmental consulting firms to assist in the process, including three environmental air consultants, three wastewater consultants, two engineering firms and a toxicologist. Activities that the mill has undertaken to identify and address odors include the following: installing continuous ambient air monitors on the mill property and offsite; completing the screening analysis of hydrogen sulfide (H_2S) emissions at the mill; restarting the steam stripper; removing the layer of fiber from the surface of the ASB; injecting calcium nitrate and peroxide into the wastewater stream; and repairing existing aerators and installing two new aerators. Certain of those activities are ongoing and have been incorporated into the corrective action plan set forth herein. In addition to the ongoing activities, certain activities are planned that will round out the corrective action plan. Those ongoing and upcoming activities set forth in this corrective action plan include the following: feeding hydrogen peroxide, liquid oxygen, and ferric chloride into the wastewater stream; increasing the treatment capacity of the stripper; continuing repair of aerators; weekly advanced chemical and microbiological analysis to evaluate biomass health; and continuous ambient air monitoring onsite and offsite. New-Indy will obtain any required permit or agency approval prior to implementing any corrective actions, and a status update for each corrective action will be included in New-Indy's weekly update to DHEC.

2. BACKGROUND

New-Indy Catawba, LLC, (New-Indy) operates a kraft pulp and paper mill located at 5300 Cureton Ferry Rd, Catawba, SC, in York County (mill). The mill operates under Title V Operating Permit #2440-0005 that was issued by the South Carolina Department of Health and Environmental Control (DHEC) on May 7, 2019, became effective on July 1, 2019, and expires on June 30, 2024. New-Indy was issued Construction Permit #2440-0005-DF on July 23, 2019, in accordance with state and federal air quality regulations and standards, to allow the mill to modify its processes to convert from bleached paper production to brown paper production. The construction permit was revised on May 13, 2020, to allow the mill to hard pipe its condensates to the wastewater treatment plant. 40 CFR 63, Subpart S, allows this hard piping as a compliance option. New-Indy began start-up operations at the mill as an integrated pulp and paper facility manufacturing brown paper on February 1, 2021.

The Maximum Achievable Control Technology (MACT) standard allows hard piping of all the condensates to wastewater treatment plants as a compliance option. New-Indy projected in its construction permit application that the mill modifications and other operational changes could result in an increase in hydrogen sulfide emissions from the mill. The projected increase in hydrogen sulfide emissions was below the "significant net increase" threshold as outlined in S.C. Regulation 61-62.5, Standard 7, and therefore DHEC issued a minor construction air permit for the change on July 23, 2019.

As stated in DHEC's May 7, 2021 order, after the agency began receiving complaints in February 2021 regarding odor in York and Lancaster counties, described as rotten egg and chemical odors, DHEC began an investigation to determine the source of the odors. DHEC staff have also reported observing strong, offsite, odors in the vicinity of the mill and several miles away from the mill that are characteristic of hydrogen sulfide emissions from kraft pulp and paper facilities. On February 22, 23 and 24, 2021, DHEC conducted air, wastewater and landfill inspections at the mill.

On April 7, 2021, DHEC notified New-Indy that based on the results of DHEC's investigation into the odor complaints, it appeared to DHEC that New-Indy may be a contributor to the reported odors in the York and Lancaster area. DHEC requested that New-Indy evaluate its operations and identify and take corrective actions on any potential sources that could be contributing to the odors then being investigated in York and Lancaster counties.

On April 24-27, the US Environmental Protection Agency (EPA) conducted geospatial monitoring of hydrogen sulfide near the mill to identify sources of the odor in the nearby vicinity. EPA monitoring data detected hydrogen sulfide onsite and offsite. DHEC maintains that this validates the determination that the mill is a source of air contaminants at undesirable levels.

DHEC issued a Corrective Order to New-Indy on May 7, 2021, to correct what DHEC described as undesirable levels of air contaminants. On May 13, 2021, New-Indy received a Clean Air Act Section 303 Emergency Order from EPA. New-Indy submitted this Corrective Action Report to DHEC on June 15, 2021. DHEC provided comments to New-Indy on June 20, 2021. New-Indy has addressed each comment in this revision. DHEC completed its quarterly inspection of the landfill on June 18, 2021 without identifying any findings or deficiencies.

3. OPERATIONS AND PROCESS DESCRIPTION

3.1 SITE HISTORY

New-Indy operates an integrated pulp and paper mill located in Catawba, South Carolina. The original pulp mill was constructed in 1959, which included a woodyard area for the processing of raw material, a kraft mill to chemically process wood chips into pulp, a pulp dryer, a chemical recovery area to recycle process chemicals, a utilities area to generate steam and electricity, a waste treatment area, and other operations.

In 1962, a paper machine (No. 1 paper machine) and a groundwood pulping process were added to the facility to facilitate the production of paper. An additional paper machine (No. 3 paper machine) was installed in 1968, as well as the expansion of the groundwood pulping process. A thermo-mechanical pulping (TMP) process was added to the facility in 1978. Eight years later (1986), the groundwood and thermo-mechanical pulping processes were eliminated, while a new paper machine (No. 2 paper machine) was installed to increase the production of paper. Also in 1986, a new thermo-mechanical pulping process was added to replace the original TMP process.

In 2003, the original kraft pulping system and bleach plant were replaced with a state-of-the-art kraft fiber line and bleaching system. In addition, No. 3 paper machine was converted from newsprint to coated paper production, and TMP was also re-configured to support only coated paper production. In 2011, the kraft pulping system and bleaching system were modified to increase production, while using the same amount of wood furnish and cooking chemicals.

In 2020, the Catawba Mill was converted from manufacturing bleached pulp suitable for manufacturing bleached lightweight coated paper and market pulp to unbleached pulp suitable for manufacturing linerboard and other unbleached pulp and paper products. The conversion resulted in retirement of the bleaching system, the TMP plant, No. 1 paper machine and several other operations. Although not currently running, the No. 2 paper machine remains permitted and is in standby for potential future use as markets allow.

3.2 OVERALL PROCESS DESCRIPTION

The Catawba Mill is comprised of seven (7) distinct process areas, which include the following: the woodyard area, the kraft pulp mill area, the paper mill area, the chemical recovery area, the utilities area, the waste treatment area, and a miscellaneous area. A process flow diagram for these process areas has been included as Figure 3-1. An overall description of the process areas is below.

Southern pine logs and chips are received by the Catawba Mill at the woodyard. Logs are debarked, chipped, and the chips are screened prior to storage for use within the pulping processes. Likewise, wood chips received at the mill are screened, and processed as needed, prior to use within the pulping processes.

The kraft (sulfate) process area is used to produce pulp. Pulp from the kraft process is produced from "cooking" wood chips in a caustic solution at an elevated temperature and pressure.

Linerboard (the outside layer in a corrugated container) is produced in the paper mill area on one state-of-the-art paper machine. Unbleached market pulp is produced on one pulp dryer.

The recovery furnaces (chemical recovery area), which are auxiliary to the kraft process, burn the organics extracted from the chips and recover cooking chemicals. The causticizing area utilizes the chemicals recovered by the recovery furnaces, and after adding lime, provides the cooking chemicals for the kraft process.

Steam and electricity are produced for facility-wide use by two combination boilers. The recovery furnaces also generate steam.

A waste treatment area receives wastewater and mill waste (solid waste) from the various previously mentioned areas of the facility. Wastewater undergoes biological treatment to remove the dissolved organic wastes prior to discharge into the receiving stream. Mill solid waste is deposited within an on-site landfill for disposal.

The miscellaneous areas include all operations that are not captured in one of the aforementioned process operating areas, including the facility roads and the pulp storage tanks.

3.3 WOODYARD

Pulp and paper production operations require fibrous vegetative material, or furnish, as a raw material. The Catawba Mill receives virgin fibers in the form of southern pine logs (roundwood furnish) or chips via trucks or railcar. Southern pine materials are off-loaded and stored for processing.

To produce a homogeneous pulping feedstock, roundwood furnish (logs) are transported to the debarking drums for processing. The resulting debarked logs are then cut into chips of equal size through the use of chipper machines. As the wood chips exit the chipper, the material is screened for size using a series of vibrating screens. Oversized chips are isolated and reprocessed to generate acceptably resized chips. Undersized chips, along with the debarking waste, are conveyed to the utilities area for use as a fuel within the facility's boilers.

Raw materials, received in chip form, are screened and processed as noted above. Once the chips, either in-house produced or purchased, are screened, the accepted chips are stored in silos for use by the kraft pulp mill.

The woodyard area was part of the original mill construction in 1959. In 1985, half of the original process equipment was replaced with new equipment. The other half of the woodyard equipment was replaced in 1991. As a result of these changes, the log slashing operation constructed in 1959 was eliminated.

No modifications were required to the woodyard to support manufacturing unbleached pulp. The woodyard operation does not require the use of emission control devices.

3.4 FIBER LINE

The fiber line utilizes "state-of-the-art" technology for production, process control, environmental control, and energy conservation. Cooking of chips is accomplished in one continuous Kamyr digester. The digester utilizes steam heat and white liquor (a caustic solution) to cook the wood chips into pulp. The outgoing pulp goes to a blow tank for storage at near atmospheric pressure conditions. The pulp is then washed to remove the spent cooking chemicals and dissolved organics (including lignin, the "glue" in wood) extracted from the chips. The washed pulp (called "brown stock") undergoes additional processing to separate fiber bundles. The brown stock is adjusted for percent solids and stored in high-density storage chests prior to use in the paper mill.

In late 2020, the fiber line was converted from producing virgin fiber suitable for brightening (bleaching) used to manufacture lightweight coated paper to producing virgin fiber suitable for manufacturing unbleached linerboard. The conversion increased the virgin pulp yield by tripling the Kappa number from less than 30 for bleached pulp to over 90 for unbleached pulp. The Kappa number indicates the "harshness" of the cook: lower Kappa resulting from a harsher cook than higher Kappa. The higher Kappa number (less harsh cooking conditions) dissolves fewer organics from the wood, thereby producing more tons of virgin pulp using the same amount of wood with fewer cooking chemicals.

The oxygen delignification system, bleaching system and chlorine dioxide plant were shut down and retired from service in September 2020 to facilitate the conversion to unbleached paper grades. During the conversion, the washers in the retired oxygen delignification system and bleaching system were repurposed to serve as two parallel three-stage brown stock washers. New refiners and screw presses were also installed to facilitate processing the higher Kappa pulp.

Process vapors from the continuous digester, washers, refiners and other sources in the fiber line are collected and routed to the non-condensable gases (NCG) collection system and then routed to the combination boilers for destruction of total reduced sulfur (TRS) compounds and hazardous air pollutants (HAPs). The fiber line NCG collection system was modified to collect process vapors from the new refiners and screw presses and the repurposed brown stock washers.

3.5 PAPER MILL

3.5.1 Paper Machines

The No. 3 paper machine utilizes stock (pulp) prepared in the fiber line. Screens, cleaners, and refiners precede the paper machine to develop a uniform stock inventory. The stock is fed to a headbox that evenly distributes the diluted stock across the width of the paper machine. After the headbox, a sheet forms as water is drained via the forming fabric, located on the wet end of the paper machine. After the free-standing water is removed, the sheet proceeds through presses which remove entrained water. The sheet then enters the dryer sections, which consist of a series of steam heated rotating cylinders, causing the sheet to "snake" around from one dryer to the other. The sheet exits the dryers and is wound onto a jumbo roll which is later cut down to smaller rolls on the winder. The finished rolls are then prepared for shipping.

The No. 3 paper machine was extensively modified to convert from manufacturing coated paper to linerboard. The coating equipment installed in 2003 was removed and the remaining systems were either replaced or upgraded to support linerboard production. The No. 3 paper machine operation does not require emission control devices.

The No. 2 paper machine was not modified and is not operating but remains available should a market develop for its production capabilities. The No. 2 paper machine operation does not require emission control devices.

3.5.2 Pulp Dryer

The pulp dryer utilizes stock prepared in the fiber line. Screens precede the pulp dryer to allow for a uniform stock inventory. The pulp dryer is a cylinder machine in which the stock is fed to a "vat" headbox. After the headbox, a sheet forms as water is drained via the vacuum drum located on the wet end of the pulp dryer. After the free-standing water is removed, the sheet proceeds through presses which remove entrained water. The sheet then enters the dryer sections where a Flakt air flotation system is utilized. The pulp dryer has a steam heated booster oven which allows for additional drying, thus ensuring the final product meets customer specifications for percent moisture. The sheet exits the dryers and is cut into sheets and packaged for shipping.

The pulp dryer stock screening system was put into service by modifying the stock supply system from the No. 1 paper machine (which was retired) to support manufacturing unbleached market pulp. The pulp dryer operation does not require emission control devices.

3.6 CHEMICAL RECOVERY

3.6.1 Evaporator System

The three evaporator sets receive dilute (weak) spent cooking liquor and dissolved organics, otherwise known as black liquor, from the fiber line. The evaporator sets, which are multiple shell and tube heat exchangers, utilize steam to evaporate water and thicken the weak black liquor. This thickened black liquor undergoes additional concentrating in the concentrators until enough water has been removed from the black liquor so it can sustain its own combustion process in the recovery furnaces. This concentrated black liquor is then injected into the two recovery furnaces where the dissolved organics are burned, chemicals are recovered, and steam is produced.

The black liquor soap is comprised of dissolved organic solids. The soap is skimmed and separated in soap separating tanks. As the soap separates and accumulates in the tanks, it is loaded into railcars for shipment to offsite byproduct customers. Because the black liquor soap is comprised of dissolved organic solids, it does not contribute to the current suspended solids issue at the wastewater treatment plant.

Emissions from the processing of black liquor through the evaporator sets are collected and treated in the low volume high concentration (LVHC) NCG system. The LVHC NCG System collects vapors from the evaporator hotwells and turpentine system vents, while emissions from the weak black liquor tanks are collected in the high volume low concentration (HVLC) system for destruction in one of the Combination Boilers. The LVHC NCG system is equipped with an in-line caustic scrubber to capture non-condensable sulfur compound vapors from the gas stream prior to incineration in either the No. 1 or No. 2 Combination Boiler. The caustic solutions from the smelt dissolving tank scrubber and LVHC in-line scrubber are recycled for the processing of wood chips.

The No. 1 evaporator set was modified to increase the evaporation rate to account for the reduction in the solids content of the weak black liquor from the repurposed washers following the conversion to unbleached pulp. No modifications were required to the No. 2 and No. 3 evaporator sets to support manufacturing unbleached pulp. No modifications were required for the LVHC NCG system to support manufacturing unbleached pulp.

3.6.2 Recovery Furnaces

The No. 2 and No. 3 recovery furnaces combust black liquor from the evaporator sets to remove dissolved organic compounds, recover the sodium and sulfur compounds used in the cooking liquor, and generate steam to operate the kraft pulp mill. The recovery furnaces also have the potential to burn No. 6 fuel oil and natural gas. Each recovery furnace is equipped with an electrostatic precipitator (ESP) to collect and recover the dried sodium and sulfur compounds and control particulate matter emissions.

No modifications were required to the recovery furnaces to support manufacturing unbleached pulp. No modifications were required for the ESPs serving the No. 2 and No. 3 recovery furnaces to support manufacturing unbleached pulp.

3.6.3 Smelt Dissolving Tanks

Molten sodium and sulfur compounds are collected from the recovery furnace as smelt from the combustion of the black liquor. The resulting smelt is then transported from the recovery furnaces into the two smelt dissolving tanks where the smelt is dissolved with recycled weak cooking chemicals to generate green liquor. This green liquor is then pumped to the Causticizing Area for further processing and re-use in the kraft process.

Smelt dissolving tanks No. 2 and No. 3 are equipped with a caustic scrubber to recycle non-condensable sulfur compounds and prevent these sources from being an odor source. Vapors from the weak black liquor tanks are collected by the HVLC system for destruction in one of the Combination Boilers. The caustic solution from the smelt dissolving tank scrubber is collected to supplement the cooking chemicals used in the fiber line for the processing of wood chips.

No modifications were required to the smelt dissolving tanks to support manufacturing unbleached pulp. No modifications were required for the caustic scrubber serving the No. 2 and No. 3 smelt dissolving tanks to support manufacturing unbleached pulp.

3.6.4 Precipitator Mix Tanks

The precipitator mix tanks recover the dried sodium and sulfur compounds collected from the recovery furnaces for reuse within the kraft pulping process. No modifications were required to the precipitator mix tanks to support manufacturing unbleached pulp. The precipitator mix tanks vent through the recovery furnaces and no modifications to the venting were required to support manufacturing unbleached pulp.

3.6.5 Causticizing Area

The Causticizing Area is designed to regenerate the cooking chemicals for the kraft pulping process. Sodium and sulfur compounds are recovered at the recovery furnaces from the burning of black liquor and are pumped from the smelt dissolving tanks to the Causticizing Area as "green liquor." Hydrated lime is added to the green liquor to form "white liquor" and calcium carbonate (lime mud). The white liquor, which is a strong caustic/sulfide solution, is used in the fiber line digester for the cooking of chips. The sodium/sulfide chemicals are contained in a closed loop within the green, white, and black liquors. The lime slaker is equipped with a wet scrubber to control dust.

No modifications were required to the causticizing area to support manufacturing unbleached pulp. No modifications were required for the slaker scrubber to support manufacturing unbleached pulp.

3.6.6 Lime Kiln

The Lime Kiln No. 2 is designed to assist in regenerating the cooking chemicals for the kraft pulping process. Hydrated lime is added to the green liquor to form "white liquor" and calcium carbonate (lime mud). The lime mud is separated from the white liquor, thickened, washed, and then reburned in the Lime Kiln to again form lime for converting recovered green liquor to white liquor. The calcium chemicals are contained in a closed loop within the lime, hydrated lime, white liquor, and lime mud constituents. The lime kiln is equipped with an electrostatic precipitator to control particulate emissions.

No modifications were required to the lime kiln to support manufacturing unbleached pulp. No modifications were required for the lime kiln ESP to support manufacturing unbleached pulp.

3.7 UTILITIES

Wood waste, such as bark, sawdust, and undersized chip fractions, is screened at the Woodyard to assure acceptable quality to burn in the No. 1 and No. 2 Combination Boilers. This wood waste is conveyed to the Util/Misc. area. Fuel oil is transported to the facility via truck or rail tanker. Natural gas is supplied by pipeline. Tire derived fuel (TDF) is transported by truck. Each combination boiler is equipped with an ESP to control particulate emissions.

Steam produced by the boilers goes into a common header and a portion is then throttled into the extraction turbine generators. These units receive high pressure steam, extract part of the energy, and discharge steam at lower temperatures and pressures. The lower pressure steam is utilized throughout the facility for process heating purposes. The condensate is returned to the Util/Misc. area for reuse.

The combination boilers also incinerate the NCG gases collected from the kraft pulp mill, the chemical recovery evaporator sets and turpentine recovery system, and the foul condensate steam stripper to control emissions of TRS compounds and HAPs. Incineration of the NCG gases is continuously monitored using the flame failure systems on each boiler. The NCG collection systems are also monitored monthly and annually for leaks following the Catawba Mill Leak Detection and Repair (LDAR) program. The LDAR inspection reports are included in Appendix A.

This area is also responsible for providing the high quality, high purity water which is required for steam production. This is accomplished through the use of flocculation beds, sand filters, and demineralizers.

No modifications were required to the combination boilers to support manufacturing unbleached pulp. No modifications were required for the ESPs serving the No. 1 and No. 2 combination boilers to support manufacturing unbleached pulp.

The fiber line NCG collection system was modified to collect process vapors from the new refiners and screw presses and the repurposed brown stock washers.

3.8 *WASTE TREATMENT*

3.8.1 Condensate Collection and Treatment System

The Catawba Mill utilizes a condensate collection tank to accumulate kraft pulping process foul condensate prior to treatment. The condensate collection tank acts as a feed tank for the foul condensate steam stripper and/or the hard pipe to the wastewater treatment system. Materials from the foul condensate can be removed in the steam stripper and combusted within a combination boiler or treated biologically in the wastewater system aerated stabilization basin (ASB). "Clean condensate" from the stripper column is recycled back to the brown stock washers for use as shower water.

The foul condensate treatment system was modified to use the hard piping option to biologically treat the foul condensate in the ASB. This modification was approved by DHEC with permit TV-2440-0005-DF. The hard pipe has no emissions points. The mill is not required by regulation to analyze the foul condensate that is hard piped to the ASB for temperature, pH, or other parameters. Likewise, the mill has not analyzed the foul condensate to determine its consistency or concentration of constituents other than methanol and TRS compounds.

Elevated terpene levels were identified in one foul condensate sample, which is not uncommon in evaporator systems processing black liquor from a modern digester system. New Indy is evaluating options to reprocess some of the foul condensate for improved turpentine recovery. The mill has confirmed that current terpene levels have not increased as a result of the conversion project, and are in fact lower than historical values.

The foul condensate steam stripper was cleaned, repaired, thoroughly checked for proper process control functionality, and returned to service in May 2021. The evaluation process also included a complete Pre-Startup Safety Review, requisite Management of Change documentation, P&ID drawing validations, interlock validations, instrumentation calibrations, instrument performance validation, and operator training reviews. No modifications to the stripper-off-gases (SOG) NCG system were required to support returning the steam stripper to service.

3.8.2 Wastewater Treatment System

The Wastewater Treatment System is designed to collect all of the wastewaters from the mill, remove settleable solids, and biologically treat the dissolved organics. Most of the wastewater collects within the mill sewers. The sewers gravity flow to the primary clarifier. The clarifier allows solids to settle to the bottom and be removed and clarified water to overflow to either the equalization (EQ) basin or directly to the aerated stabilization basin (ASB). The solids from the primary clarifier, otherwise known as "sludge," are pumped to the EQ basin that allows additional separation (thickening) of the solids. Decant from the EQ basin flows into the aeration basin along with clarified wastewater from the clarifier. The condensate hard pipe discharges below the liquid surface of the ASB to biologically treat contaminants in the foul condensate. The treated wastewater from the aeration basin flows into holding ponds. From the holding ponds, the treated wastewater flows by gravity through a post-aeration basin where mechanical aerators increase the dissolved oxygen content of the wastewater prior to discharge into a receiving stream.

Primary clarifier solids that thicken in the EQ basin are dredged and deposited in the No. 4 sludge pond.

The original hard pipe was installed in 1999 under construction permit CK to comply with the condensate treatment requirements under MACT Subpart S (40 CFR 63.446). The hard pipe was routed into the EQ basin below liquid surface level. In 2000, the original hard pipe was replaced with the condensate steam stripper as the Subpart S compliance option (construction permit CN), prior to the April 16, 2001 initial compliance date. The original hard pipe remained in place, but was not used for demonstrating compliance with Subpart S. Upon decommissioning the stripper operation as a part of the mill's conversion to unbleached production, the hard pipe discharge was relocated to the ASB to comply with the Subpart S requirement that it be routed directly into an active part of the wastewater treatment plant. The ASB was reconfigured by increasing the diameter of the hard pipe below the liquid surface near the entrance to the ASB. The wastewater treatment system does not operate with emission control devices.

3.8.3 Industrial Landfill

A 15-acre industrial landfill is located west of the paper machines at the mill. Paper, bark, and other wood product wastes are deposited within the landfill on a daily basis. Fly ash, grits, and dregs are also approved for disposal in the landfill. While mill refuse is disposed on-site, commercial and office waste streams are collected and transported off-site for disposal. Fill dirt is removed from the on-site borrow pits and deposited atop the refuse as daily cover.

No modifications were required to the industrial landfill to support manufacturing unbleached pulp. The landfill does not operate with emission control devices.

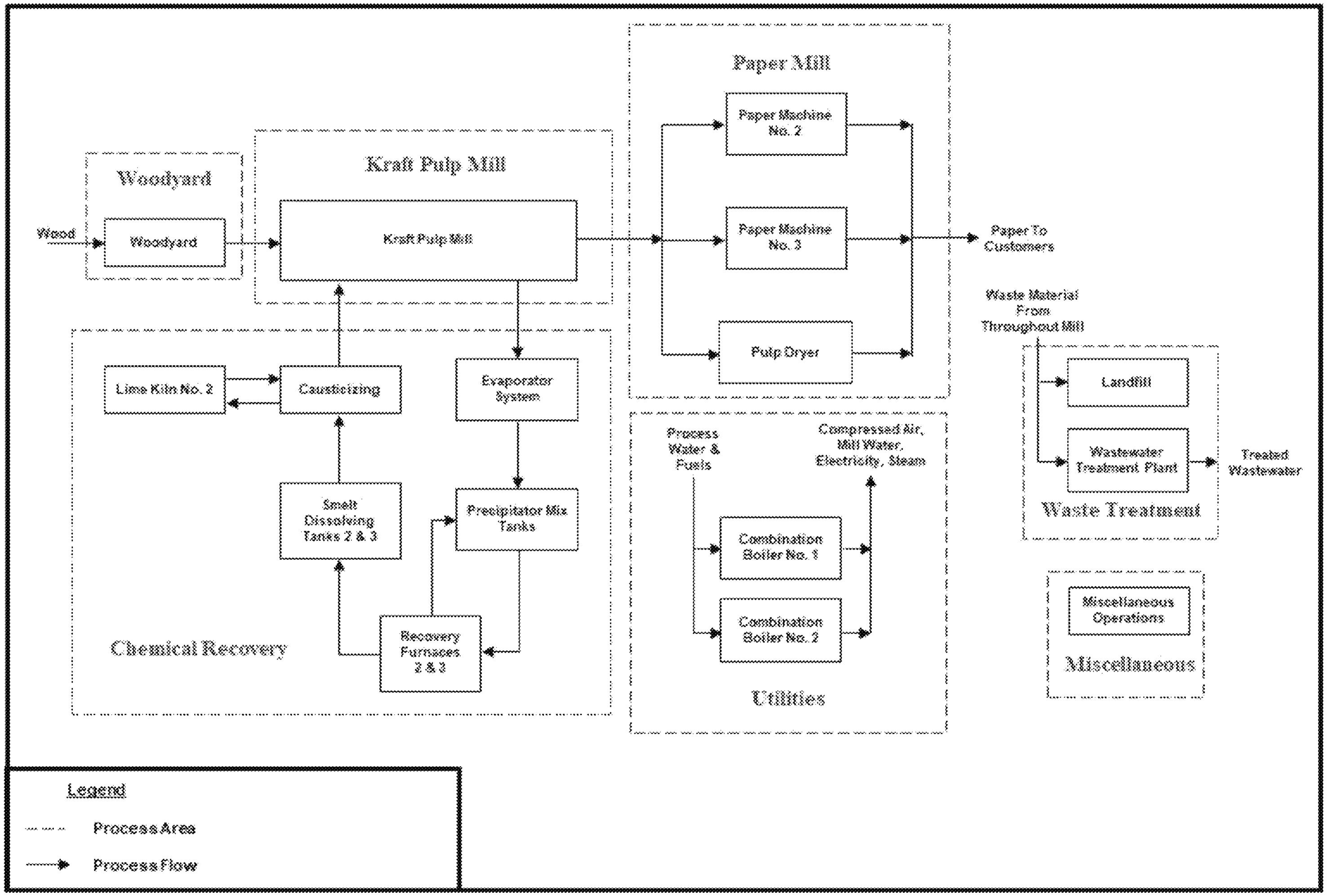
3.9 MISCELLANEOUS SOURCES

The Catawba Mill includes miscellaneous equipment and operations such as facility roads, emergency generators, storage tanks, facility maintenance activities, and lab activities.

The pumps and piping to the high density (HD) pulp storage tanks were modified to re-direct pulp from the retired No. 1 paper machine and better support unbleached pulp. The agitators in each tank were also rebuilt or replaced and the No. 4 HD storage tank was repurposed as a low density (LD) storage tank.

No modifications were required to the tanks storing black liquor, green liquor, or white liquor. The spare and weak liquor tanks are vented to the HVLC system for treatment. The pulp tank and other liquor storage tanks do not operate with emission control devices.

Figure 3-1
Simplified Mill Flow Diagram



4. NEW-INDY EVALUATION OF OPERATIONS AND PROCESSES

4.1 NEW-INDY EVALUATION OF OPERATIONS AND PROCESSES TO IDENTIFY POTENTIAL ODORS CONDUCTED IN CONSULTATION WITH NCASI

Paragraph 3 of DHEC's May 7, 2021 Order reads:

> 3. On or before June 1, 2021, complete an evaluation conducted in consultation with a nationally recognized organization, such as the National Council for Air and Stream Improvement (NCASI), to fully evaluate the current operations and processes at the Facility to identify all potential sources that could be contributing to the odors and elevated levels of H_2S on and off Facility property. The evaluation must include the recent change in operation from making bleached paper to brown paper, the wastewater treatment plant operations, the recent modifications related to the steam stripper and the hard piping of the foul condensate tank to the wastewater treatment plant, any increases in stack emissions, any changes in operation of pollution control equipment, and any uncontrolled emissions to determine if these changes are contributing to the odors in the vicinity of the Facility.

New-Indy submitted an evaluation to DHEC on June 1, 2021. This Section of the CAP describes in additional detail New-Indy's efforts in consultation with NCASI to fully evaluate current operations at the New-Indy mill to identify potential sources that could be contributing to reported odors and hydrogen sulfide emissions. As explained in Section 3, the Catawba Mill is comprised of seven distinct process areas, including the woodyard area, the kraft pulp mill area, the paper mill area, the chemical recovery area, the utilities area, the waste treatment area, and the miscellaneous area. In consultation with numerous consultants and advisors, including NCASI personnel, New-Indy conducted an evaluation of each process area to identify potential sources that could be contributing to reported odors.

New-Indy understands that the majority of odor complaints describe a "rotten egg" odor that generally is associated with H_2S. New-Indy conducted its evaluation of operations and processes as they might relate to the different types of odors generally associated with integrated kraft pulping and chemical recovery operation.

New-Indy conducted the odor evaluation, but New-Indy also engaged the assistance of eight (8) consultant and engineering firms to assist in the evaluation and corrective action planning, including TRC Consultants (air and wastewater), ALL4, Weston, NCASI personnel, EBS, LDX

LDX, E360 and Trinity. This evaluation included an intensive LDAR evaluation by E360, installation of three mobile ambient monitors and meteorological stations by TRC and a screening analysis by Weston, among many other efforts.

4.2 LDAR EVALUATION

Pursuant to the mill's Title V air permit, the mill is subject to LDAR requirements under Federal law. Leaks from manufacturing and related equipment, particularly pipes and flanges, can be potential sources of odors. After receiving the initial round of odor complaints in January and February of 2021, New-Indy engaged its LDAR consultant, E360, to conduct an intensive LDAR evaluation at the mill. The LDAR consultant conducted the evaluation of each of the mill's identified potential leak points and discovered no deficiencies in the mill's program or in the equipment. *See* Appendix A for E360's LDAR Evaluation Report.

4.3 SCREENING ANALYSIS

To attempt to identify concentrations and locations of H_2S at the mill, New-Indy engaged Weston to conduct a screening analysis of H_2S emissions. Weston conducted ambient air sampling and drafted a report that is attached hereto as Appendix B.

4.4 AMBIENT AIR MONITORS

After New-Indy conducted its initial screening with Weston, New-Indy determined that it needed additional data to quantify the impact of potential odor sources at the mill. New-Indy engaged TRC to install two ambient monitors, one on mill property, but across the road from the mill entrance at an adjacent baseball field, and one on-site near the ASB. The unit at the baseball field contained a meteorological station. Later, New-Indy determined that it needed additional monitoring data, so it installed a third monitoring station to the northeast of the mill near the Highway 5 bridge and a new meteorological monitoring station on top of the kraft pulp mill digester structure (250 feet above ground elevation, unencumbered by any nearby building structures).

The onsite ambient air monitor at Station 1 began collecting data on April 9, 2021, and the monitor at Station 2 began collecting data on April 10, 2021. The monitor at Station 3 began collecting data on April 27, 2021. The monitors at stations 2 and 3 were relocated to meet EPA's requirement to obtain fence-line data. The monitor at Station 3 remained in place. Maps of the original and current locations of those three monitors are attached hereto as Appendix C. Detailed ambient monitoring data from the three monitors is attached hereto as Appendix D. The data includes hourly average values for H_2S concentration and meteorological data. Initially, New-Indy only had a meteorological station on monitoring station 1 while the meteorological station instruments were being secured for installation on Stations 2 and 3. Now each station includes an ambient air monitor and a meteorological station.

The wind data from the meteorological station on top of the kraft digester structure has not been included due to the fact that there are individually localized meteorological stations at each of the fence line monitoring stations, which more accurately reflect the conditions at the monitors. The station on top of the digester was purchased early in the odor investigation process as a means of obtaining some site-specific data rather than that from either the Lancaster County or Rock Hill regional airports. The meteorological data from each monitoring station is more accurate since it is measured at the specific ambient monitoring station and reflects variable gradients across the mill site within each day. Therefore, no correlation has been made between the top of the digester and the site-specific meteorological data at each monitoring station. There is also a significant difference in elevation between the top of the digester and each fence-line monitoring station, adding to the incompatibility of the digester station readings to the meteorological stations.

4.5 PROCESS AREA REVIEW

As noted above, New-Indy reviewed its seven process areas to evaluate potential odor issues:

- Woodyard - Odors typically associated with the woodyard are "pine" or "wood" type odors, similar to logging and wood milling operations. These are not the types of odors about which complaints are being made. New-Indy, in consultation with its consulting professionals, concluded that the woodyard was not a likely source of the subject odors.

- Kraft pulp mill - A kraft pulping process can produce odors similar to "rotten eggs." However, the chemicals that create these odors are treated in air emission control equipment. The mill is in full compliance with its air permit conditions, including LDAR. New-Indy, in consultation with its consulting professionals, concluded that the kraft pulping process likely was not the source of the subject odors.

- Paper mill - A paper machine process can affect the wastewater treatment plant's operation, but typically only as a result of the impact of sewered waste losses on the wastewater treatment plant system. The dilution water (white water) from the paper machine overflows into the sewer to the wastewater treatment plant. Upset operating conditions in the pulp mill can cause organic and chemical carryover to the paper machine operations which will get drained out of the pulp on the machine and into the process sewer. Operational upsets in the paper machine operation can also result in pulp fiber being released to the process sewer. Both of these upset scenarios can have an impact on the wastewater treatment plant efficiencies. New-Indy, in consultation with its consulting professionals, concluded that the paper machine process itself likely was not the source of the subject odors.

- Chemical Recovery - The Chemical Recovery processes can emit odors similar to "rotten eggs." However, the chemicals that create these odors are treated in air emission control equipment. The mill is in full compliance with its air permit conditions, including LDAR. New-Indy, in consultation with its consulting professionals, concluded that the chemical recovery process likely was not the source of the subject odors.

- Utilities - The utilities process does not emit the type of odors about which complaints are being made. New-Indy, in consultation with its consulting professionals, concluded that the utilities likely were not the source of the subject odors.

- Miscellaneous sources - The miscellaneous sources do not emit the type of odors about which complaints are being made. New-Indy, in consultation with its consulting professionals, concluded that the miscellaneous sources likely were not the source of the subject odors.

- Waste Treatment - The waste treatment system can emit odors similar to "rotten eggs." These odors can occur when the wastewater is not efficiently treated in the wastewater treatment process. New-Indy and its consulting professionals concluded that the waste treatment system may be the cause of the subject odors. These low-level odors, though, do not explain the intense reactions being reported by local residents who live at long distances from the plant.

After review of the various operations and processes, and upon consultation with NCASI and its other professional consultants, New-Indy narrowed its focus to the wastewater system.

5. NEW-INDY EFFORTS TO ADDRESS ODOR COMPLAINTS

This section details New-Indy's considerable efforts to address odor complaints. New-Indy received the first odor complaint on January 22, 2021. Since that time, New-Indy has worked tirelessly to respond to the complaints, evaluate New-Indy's operations and address reported odors.

Around the time that New-Indy began receiving odor complaints, South Carolina DHEC conducted an air quality inspection, on February 22 and 23, 2021, and a wastewater inspection, on March 15, 2021, at the mill. The wastewater inspection identified a fiber layer on the surface of the ASB. The layer of fiber on the ASB was the result of initial startup operations following the conversion from bleached paper to unbleached containerboard. The layer of fiber made it difficult for personnel to reach the aerators in the ASB and conduct preventive maintenance and repairs. As a result, several aerators became inoperable.

Beginning on March 1, 2021, New-Indy began removing the layer of fiber from the surface of the ASB. This effort has continued using various methods, including cutting the rim from the forty or so feet of fiber closest to the edge of the basin and using a barge to dredge and push the fiber layer toward the edge of the ASB. That fiber layer is hauled to the No. 4 sludge pond where it is processed with other similar waste. These continuing efforts to remove the fiber layer, along with New-Indy's use of an air boat have allowed personnel to reach the aerators, conduct maintenance and repairs on those aerators and return them to service. The ASB has fifty-two aerators, and at present, 38 of those aerators are operating. In the past 30 days, New-Indy has put 10 aerators back into operation.

Also, when New-Indy began receiving odor complaints, New-Indy established a community service hotline to identify complaints. New-Indy began logging complaints, including location, time, date, mill operations assessment and wind speed and direction.

On March 5, 2021, New-Indy conducted a full odor survey with its LDAR consultant, E360. The consultant determined that there were no significant leaks that could cause offsite odors and that the plant was in compliance with its LDAR requirements under Federal law. The mill continues to complete monthly LDAR inspections with no significant leaks having been detected, and when minor leaks are discovered during the inspection, repairs are made as quickly as possible and within compliance guidelines for those repairs.

On March 8, 2021, New-Indy contacted NCASI for assistance in evaluating operations. The next day, on March 9, the mill contacted Trinity Consultants to assist in the evaluation of odor issues. The following day on March 10, 2021, Senior DHEC management visited the mill and met with mill personnel. The DHEC representatives and mill personnel reviewed the mill's progress toward identifying sources of odors, and abating odors.

On March 12, 2021, New-Indy began consultation with LDX regarding utilization of the stripper as opposed to hard piping the foul condensate. With the approval of permit TV-2440-0005-DF in July of 2019, New-Indy previously had obtained DHEC approval to idle the foul condensate steam stripper and hard pipe foul condensate to the ASB.

On March 17, 2021, New-Indy hosted two environmental consultants onsite. The first was Weston for sampling ambient emissions and emissions from process vents and stacks and multiple ambient locations throughout the mill property. The second was TRC for onsite ambient monitoring, working in concert with Weston to guide the ambient air monitoring effort and observe the wastewater treatment system. TRC returned on March 19, 2021, to observe the wastewater system and again on March 24, 2021, for additional onsite monitoring evaluations. On March 25, 2021, New-Indy purchased an odor measurement drone and hand-held equipment. Although the drone system has been purchased, only the drone has been received, as the mobile DR2000 lab measurement device has been on backorder with the manufacturing company. Therefore, New-Indy does not have odor measurement results from these devices. On March 30, 2021, TRC and another consultant (ALL4) conducted a review of the back-trajectory modeling conducted by DHEC. In accordance with Condition 5 of the Order, New-Indy will be completing an air dispersion modeling analysis following the completion of the stack testing. New-Indy will provide a report of that analysis to DHEC when it is complete.

It was important for New-Indy to determine the emissions at New-Indy's property boundary and onsite. As such, New-Indy engaged TRC to install three mobile monitoring units at the property.

One unit was located on mill property but across the road from the main entrance in a nearby baseball field. That monitor was equipped with a meteorological station. The second monitor was located in the plant property. On April 28, 2021, the third monitor was located on the property near the I-5 bridge. Appendix C indicates the location of the monitors. Appendix D provides the monitoring data for the three monitoring stations. The first onsite data was generated on approximately April 9, 2021. The monitoring data from the original monitor location begins on page 8 of Appendix D.

On April 9, 2021, New-Indy began removing solids from the equalization basin. Four days later, on April 13, 2021, New-Indy began optimizing liquor sulfidity control in the ASB. Ten days later, on April 19, 2021, New-Indy began adding calcium nitrate in the ASB to supplement oxygen as an electronic acceptor and reduce the formation of hydrogen sulfide. The mill stopped adding calcium nitrate to the ASB on June 30, 2021 because the need was eliminated after additional aerators came online and the addition of hydrogen peroxide and liquid oxygen proved successful.

During this time, New-Indy requested that Weston conduct a screening analysis to determine if high levels of H_2S were being generated at and around the mill. Weston took air samples and generated a screening report that New-Indy provided to DHEC on April 19, 2021. The Weston report is attached as Appendix B. On April 21, 2021, New-Indy began an operations project to return the stripper to operation. On April 28, 2021, TRC installed the third ambient monitor at a location near the bridge on Highway 5.

The foul condensate steam stripper was returned to operation on May 3, 2021. On that same day, New-Indy hosted consultants Valmet and Rolf Ryham to provide guidance for optimizing the performance of the recovery furnace.

On May 7, 2021, New-Indy received the DHEC order and immediately began implementing the order's requirements, in addition to continuing its odor mitigation efforts independent of the DHEC order. On May 11, 2021, New-Indy continued its No. 1 holding pond oxygen improvement levels by feeding calcium nitrate into the ASB. The site also had an air modeling meeting with TRC and a meeting with NCASI to discuss the need for NCASI to verify the emissions factors the mill used to calculate the actual and potential emissions included in the construction permit application for the change to containerboard. New-Indy had another meeting with NCASI on May

14, 2021, in which NCASI verified the mill used the correct emission factors and validated the calculations.

On May 13, 2021, New-Indy received an order from EPA. Immediately, New-Indy began implementing the requirements of the May 13 EPA order, in addition to implementing the DHEC order and continuing the mill's independent odor mitigation efforts. New-Indy engaged SFC to use a "push boat" that was mobilized on May 16, 2021, to push the fiber layer at the ASB toward the bank. SFC worked with Saiia to transport the solids from the ASB to the No. 4 sludge dewatering pond. This push boat was successful for several days, but as it moved progressively deeper into the surface solids, it reached a point where it could no longer push the material toward the dike for removal by the long arm excavator. Throughout April and May, New-Indy continued to return aerators to service. On May 26, 2021, New-Indy moved its three ambient air monitors to new locations pursuant to the EPA order. Attached as Appendix C is the current location of the monitors. Attached as Appendix D is the air emissions data generated by the monitors.

On May 26, 2021, New-Indy launched a website dedicated to facilitating communication and transparency with local residents and regulatory agencies (www.newindycatawba.com). This website includes daily reports explaining the EPA's independent hydrogen sulfide data collection as well as information about the mill. The mill also posts its daily ambient air emissions monitoring report on the website in an effort to provide transparency to the public. The website also includes public notices of any mill activities that may generate increased odor levels.

On June 8, 2021, New-Indy consulted with LDX regarding current stripper capacity and the repaired trim reflux condenser, which is used to polish the methanol capture efficiency for the stripper operation. On June 8, 2021, New-Indy personnel participated in Scentroid TR8 + Pollutracker training to learn how to use the instrument to measure ambient concentrations on both instantaneous and longer term (24-hour) measurement periods. New-Indy also removed the trim reflux condenser from the stripper for repairs in an effort to increase stripper capacity. These repairs are ongoing and the unit has not been reinstalled. Any potential increase in capacity resulting from those repairs will be evaluated and confirmed once the unit is operational. The pilot study requests and DHEC approvals for the new aerators and the hydrogen peroxide feed are provided in Appendix E. On June 9, 2021, New-Indy improved the oxygen transfer into No. 1

holding pond by installing two aerators and injecting peroxide into the waste stream. On June 9, 2021, the Post-Aeration Basin tank at the wastewater outfall was upfitted with a new cover and carbon filter. Also on that day, personnel began using the TR8 + Pollutracker handheld device in the field to measure ambient levels of H_2S at various locations and evaluate the initial inlet and discharge concentrations around the pilot activated carbon filtration system. Also in June, the plant continued to remove ASB fiber layer using a barged-mounted long-reach excavator in addition to a long-reach excavator from the bank.

6. CORRECTIVE ACTION PLAN – CONDITION 6

6.1 H_2S SOURCE EVALUATION

Condition 3 of the DHEC Order required New-Indy to complete the following:

> On or before June 1, 2021, complete an evaluation conducted in consultation with a nationally recognized organization, such as the National Council for Air and Stream Improvement (NCASI), to fully evaluate the current operations and processes at the Facility to identify all potential sources that could be contributing to the odors and elevated levels of H_2S on and off Facility property. The evaluation must include the recent change in operation from making bleached paper to brown paper, the wastewater treatment plant operations, the recent modifications related to the steam stripper and the hard piping of the foul condensate tank to the wastewater treatment plant, any increases in stack emissions, any changes in operation of emission control equipment, and any uncontrolled emissions to determine if these changes are contributing to the odors in the vicinity of the Facility.

New-Indy consulted with NCASI in May 2021 and confirmed the emissions estimates contained in the 2019 and 2020 air permit applications were correctly applied and generally representative of the conversion from manufacturing bleached paper to brown paper.

The H_2S and TRS (H_2S, methyl mercaptan, dimethyl disulfide and dimethyl sulfide) emissions from each area of the mill are reviewed in the following sections. A summary of the H_2S and TRS emissions are provided in Table 6-1.

6.1.1 Woodyard

No modifications were required to the woodyard to support manufacturing unbleached pulp. The woodyard does not operate with emission control devices. There are no known H_2S or TRS emissions from the woodyard.

6.1.2 Kraft Pulp Mill

The conversion to brown paper increased the virgin pulp yield by tripling the Kappa number from less than 30 for bleached pulp to over 90 for unbleached pulp. Kappa number is a key test method for determining the level of lignin remaining in a sample of digested pulp. The Kappa number indicates the "harshness" of the cook, lower Kappa being a harsher cook than higher Kappa. The higher Kappa number (less harsh cooking conditions) dissolves fewer organics from the wood, thereby producing more tons of virgin pulp using the same amount of raw materials (wood and with fewer cooking liquor chemicals).

With the exception of the pulp storage tanks after pulp washing, the kraft pulp mill sources are collected and routed to the non-condensable (NCG) system, and H_2S and TRS emissions are controlled through incineration in the combination boilers.

Source testing of both the No. 1 and No. 2 combination boilers will be conducted by New-Indy, in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from, and verified by, NCASI. The No. 1 and No. 2 combination boilers will also be tested for SO_2 while combusting NCG and SOG together and NCG alone.

6.1.3 No. 2 Paper Machine

The No. 2 paper machine was not modified and remains available should market conditions create an opportunity for its production capabilities to be utilized. The No. 2 off-machine coaters have been retired from service. The No. 2 paper machine does not operate with emission control devices. The No. 2 paper machine has not returned to operation following the conversion.

6.1.4 No. 3 Paper Machine

The No. 3 paper machine was extensively modified to convert from manufacturing coated paper to linerboard. The No. 3 paper machine does not operate with emission control devices. New-Indy conducted a screening study of one No. 3 paper machine vent, and no measurable TRS emissions were present in the vent gases. Source testing of the No. 3 paper machine will be conducted by New-Indy in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from NCASI.

6.1.5 Pulp Dryer

The pulp dryer stock screening system was configured by modifying the stock screening system from the No. 1 paper machine (which was retired) to support manufacturing unbleached market pulp. The pulp dryer does not operate with emission control devices. Source testing of the pulp dryer will be conducted by New-Indy in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from NCASI.

6.1.6 Evaporator System

The No. 1 evaporator set was modified to operate as a five-effect system to increase the evaporation rate to account for the reduction in the solids content of the weak black liquor from the repurposed washers following the conversion to unbleached pulp. No modifications were required to the No. 2 and No. 3 evaporator sets to support manufacturing unbleached pulp.

Emissions from the processing of black liquor through the evaporator sets are collected and treated in the low volume high concentration (LVHC) NCG system. The LVHC NCG System collects vapors from the evaporator hotwells and turpentine system vents. The LVHC NCG system is equipped with an in-line caustic scrubber to capture non-condensable sulfur compound vapors from the gas stream prior to incineration in either the No. 1 or No. 2 combination boiler.

No modifications were required for the LVHC NCG system to support manufacturing unbleached pulp. The Kappa change results in TRS emissions 16% lower per ton of pulp production based on information provided by NCASI.

Source testing of both the No. 1 and No. 2 combination boilers will be conducted by New-Indy in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from NCASI. The No. 1 and No. 2 combination boilers will also be tested for SO_2 while combusting NCG and SOG together and NCG alone.

6.1.7 Recovery Furnaces

No modifications were required to the No. 2 and No. 3 recovery furnaces to support manufacturing unbleached pulp. No modifications were required for the ESPs serving the No. 2 and No. 3 recovery furnaces to support manufacturing unbleached pulp.

6.1.8 Smelt Dissolving Tanks

Smelt dissolving tanks No. 2 and No. 3 are equipped with a caustic scrubber to reduce particulate matter (PM) and TRS emissions.

No modifications were required to the smelt dissolving tanks to support manufacturing unbleached pulp. No modifications were required for the caustic scrubber serving the No. 2 and No. 3 smelt dissolving tanks to support manufacturing unbleached pulp.

New-Indy will conduct source testing of the smelt dissolving tank vent to confirm the original H_2S and TRS emissions estimates based on information from NCASI.

6.1.9 Precipitator Mix Tanks

No modifications were required to the precipitator mix tanks to support manufacturing unbleached pulp. The precipitator mix tanks vent through the recovery furnaces, and no modifications to the venting were required to support manufacturing unbleached pulp. Therefore, emissions reported from the recovery furnaces reflect the emissions from these sources.

6.1.10 Causticizing Area

No modifications were required to the causticizing area to support manufacturing unbleached pulp. No modifications were required for the slaker scrubber to support manufacturing unbleached pulp. The causticizing area is a high pH process, and no H_2S emissions are expected. In addition, the causticizing area uses fresh water and no change in TRS emissions is expected.

6.1.11 Lime Kiln

No modifications were required to the No. 2 lime kiln to support manufacturing unbleached pulp. No modifications were required for the lime kiln ESP to support manufacturing unbleached pulp.

6.1.12 Combination Boilers

The combination boilers also incinerate the NCG gases collected from the kraft pulp mill, the chemical recovery evaporator sets and turpentine recovery system, and the foul condensate steam stripper to control emissions of TRS compounds and HAPs. The kraft pulp mill NCG collection system was modified to collect gases from the new refiners and screw presses and the repurposed brown stock washers.

No modifications were required to the combination boilers to support manufacturing unbleached pulp. No modifications were required for the ESPs serving the No. 1 and No. 2 combination boilers to support manufacturing unbleached pulp.

Incineration of the NCG gases is continuously monitored using the flame failure systems on each boiler. The NCG collection systems are also monitored monthly and annually for leaks following the Catawba Mill LDAR program.

Source testing of both the No. 1 and No. 2 combination boilers will be conducted by New-Indy in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from NCASI. The No. 1 and No. 2 combination boilers will also be tested for SO_2 while combusting NCG and SOG together and NCG alone.

6.1.13 Condensate Collection and Treatment System

The condensate treatment system was modified to use the hard piping option to biologically treat the foul condensate in the ASB. The hard pipe has no emissions points.

The foul condensate steam stripper was repaired and returned to service in May 2021. No modifications to the stripper-off-gases (SOG) NCG system were required to support returning the steam stripper to service or manufacturing unbleached pulp.

Source testing of the steam stripper will be conducted by New-Indy in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from NCASI.

6.1.14 Wastewater Treatment System

The ASB was modified by increasing the diameter of the hard pipe below the liquid surface near the entrance to the ASB. The wastewater treatment system does not operate with emission control devices.

Please see Section 7 for a detailed discussion of the wastewater treatment system.

6.1.15 Industrial Landfill

No modifications were required to the industrial landfill to support manufacturing unbleached pulp. The landfill does not operate with emission control devices. There are no known H_2S or TRS emissions from the landfill. The landfill is permitted for disposal of industrial wastes, reburned lime, lime mud, boiler ash, green liquor dregs and slaker grits. The landfill wastes are covered to minimize windblown materials, landfill odors, and attracting vectors. These wastes are mostly inert materials with elevated pH having little potential for generating H_2S when covered. The landfill is also permitted for disposal of the belt press sludge, however in practice, the sludge is deposited in the No. 4 sludge pond in the wastewater treatment system, not the industrial landfill. The landfill does not operate with emission control devices. There are no known H2S or TRS emissions from the landfill. Liquor sludges have not been deposited in the landfill. Therefore, a landfill gas study is not planned.

6.1.16 Miscellaneous Sources

The pumps and piping to the high density (HD) pulp storage tanks were modified to re-direct pulp from the retired No. 1 paper machine and better support unbleached pulp. The agitators in each tank were also rebuilt or replaced, and the No. 4 HD storage tank was repurposed as a low density (LD) storage tank.

No modifications were required to the tanks storing black liquor, green liquor, or white liquor. Emissions from the spare and weak liquor tanks are vented to the HVLC system for treatment. The remaining pulp and liquor storage tanks do not operate with emission control devices. The emissions from all storage tanks were estimated using information from NCASI. No change to the storage tank emissions is expected based on the reduction in TRS due to the Kappa change.

No modifications were required to the other miscellaneous sources to support manufacturing unbleached pulp.

6.2 *CORRECTIVE ACTION PLAN – CONDITION 6*

Condition 6 of the DHEC Order required New-Indy to complete the following:

> On or before June 15, 2021, submit to the Department a report of the evaluation conducted in Step 3 above and, for review, comment, and approval; a corrective action plan (CAP) (developed and stamped by a South Carolina-registered Professional Engineer (PE)) and a schedule of implementation, which addresses operational issues identified in the above-referenced evaluation as contributing to the odor. The schedule of implementation shall include specific dates or timeframes for initiation and the completion of each action and details as to how each action addresses the odor and operational issues noted above.

The corrective actions for each area of the mill are reviewed in the following sections.

6.2.1 Woodyard

No operational issues or corrective actions have been identified for the woodyard.

6.2.2 Kraft Pulp Mill

Source testing of both the No. 1 and No. 2 combination boilers will be conducted by New-Indy in accordance with Condition 5 of the DHEC Order to confirm the original H_2S and TRS emissions estimates based on information from NCASI. The No. 1 and No. 2 combination boilers will also be tested for SO_2 while combusting NCG and SOG together and NCG alone.

No operational issues or corrective actions have been identified for the kraft pulp mill pending the results of the source testing required by Condition 5 of the DHEC Order.

6.2.3 No. 2 Paper Machine

No operational issues or corrective actions have been identified for the No. 2 paper machine.

6.2.4 No. 3 Paper Machine

Source testing of the No. 3 paper machine will be conducted by New-Indy in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from NCASI.

No operational issues or corrective actions have been identified for the No. 3 paper machine pending the results of the source testing required by Condition 5 of the DHEC Order.

6.2.5 Pulp Dryer

Source testing of the pulp dryer will be conducted by New-Indy in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from NCASI.

No operational issues or corrective actions have been identified for the pulp dryer pending the results of the source testing required by Condition 5 of the DHEC Order.

6.2.6 Evaporator System

Source testing of both the No. 1 and No. 2 combination boilers will be conducted by New-Indy in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from NCASI. The No. 1 and No. 2 combination boilers will also be tested for SO_2 while combusting NCG and SOG together and NCG alone.

No operational issues or corrective actions have been identified for the evaporator system pending the results of the source testing required by Condition 5 of the DHEC Order.

6.2.7 Recovery Furnaces

As required by Title V Permit Conditions C.54 and C.55, the TRS emissions from the recovery furnaces are continuously monitored and recorded to verify continuous compliance. Semi-annual reports are submitted to DHEC including all 12-hour average TRS concentrations exceeding the applicable TRS emissions limits. The mill calibrates, maintains, and operates the TRS monitors in accordance with the applicable requirements of 40 CFR 60.284(f), 40 CFR 60.13, and Performance Specifications 1, 3, and 5 of Appendix B of 40 CFR, Part 60. The Mill will continue to meet the applicable TRS emissions limits for both recovery furnaces.

No operational issues or corrective actions have been identified for the No. 2 and No. 3 recovery furnaces.

6.2.8 Smelt Dissolving Tanks

New-Indy will conduct source testing of the smelt dissolving tank vent to confirm the original H_2S and TRS emissions estimates based on information from NCASI.

No operational issues or corrective actions have been identified for the No. 2 and No. 3 smelt dissolving tanks pending the results of the source testing conducted by New-Indy.

6.2.9 Precipitator Mix Tanks

The precipitator mix tanks are vented through the recovery furnaces and would be reflected in the emissions from those sources.

No operational issues or corrective actions have been identified for the precipitator mix tanks.

6.2.10 Causticizing Area

The causticizing area is a high pH process, and no H_2S emissions are expected. The causticizing area uses fresh water, and no change in TRS emissions is expected.

No operational issues or corrective actions have been identified for the causticizing area.

6.2.11 Lime Kiln

As required by Title V Permit Condition C.58, the TRS emissions from the lime kiln are continuously monitored and recorded to verify continuous compliance. Semi-annual reports are submitted to DHEC including all 12-hour average TRS concentrations exceeding the applicable TRS emissions limit. The mill calibrates, maintains, and operates the TRS monitor in accordance with the applicable requirements of 40 CFR 60.284(f), 40 CFR 60.13, and Performance Specifications 1, 3, and 5 of Appendix B of 40 CFR, Part 60. The Mill will continue to meet the applicable TRS emissions limits for the lime kiln. No operational issues or corrective actions have been identified for the No. 2 Lime Kiln.

6.2.12 Combination Boilers

Incineration of the NCG gases is continuously monitored using the flame failure systems on each boiler. The NCG collection systems are also monitored monthly and annually for leaks following the Catawba Mill LDAR program.

Source testing of both the No. 1 and No. 2 combination boilers will be conducted by New-Indy, in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from NCASI. The No. 1 and No. 2 combination boilers will also be tested for SO_2 while combusting NCG and SOG together and NCG alone. No operational issues or corrective actions have been identified for the No. 1 and No. 2 combination boilers pending the results of the source testing required by Condition 5 of the DHEC Order.

6.2.13 Condensate Collection and Treatment System

Source testing of the foul condensate steam stripper will be conducted by New-Indy in accordance with Condition 5 of the DHEC order to confirm the original H_2S and TRS emissions estimates based on information from NCASI.

No operational issues or corrective actions have been identified for the foul condensate steam stripper pending the results of the source testing required by Condition 5 of the DHEC Order.

6.2.14 Wastewater Treatment System

Please see Section 7 for a detailed discussion of the wastewater treatment system operational issues and corrective actions.

6.2.15 Industrial Landfill

No operational issues or corrective actions have been identified for the landfill.

6.2.16 Miscellaneous Sources

No operational issues or corrective actions have been identified for the miscellaneous sources.

6.3 PROFESSIONAL ENGINEERING CERTIFICATION

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S.C. Registration No. 34347

Company: ALL4 LLC

COA No. 6409

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 34347
SHERYL WATKINS

Sheryl Watkins

7-12-21

(PE Seal)

Table 6-1
Summary of H_2S and Other TRS Compound Emissions

SOURCE OF H2S	H2S Bleached Mill (Stripper) Controlled maximum lb/hr	H2S Bleached Mill (Stripper) Percent percent of total	H2S Brown Mill (Hard Pipe) Controlled maximum lb/hr	H2S Brown Mill (Hard Pipe) Percent percent of total	H2S Brown Mill (Combo) Controlled maximum lb/hr	H2S Brown Mill (Combo) Percent percent of total	TRS Bleached Mill (Stripper) Controlled maximum lb/hr	TRS Bleached Mill (Stripper) Percent percent of total	TRS Brown Mill (Hard Pipe) Controlled maximum lb/hr	TRS Brown Mill (Hard Pipe) Percent percent of total	TRS Brown Mill (Combo) Controlled maximum lb/hr	TRS Brown Mill (Combo) Percent percent of total	TRS/H2S Control	Compliance Monitoring	Condition 3 Operational Evaluation	Condition 6 Corrective Action Plan
Kraft Mill NCG System	0.35	6.7%	0.43	8.1%	0.43	8.2%	1.24	1.9%	1.60	2.8%	1.60	3.1%	Incineration in Combination Boilers	Flame Failure System CMS	Source test required by Condition 5 to confirm expected emissions	No corrective actions identified pending source test results
Stripper Off Gases	0.70	13.3%	N/A	N/A	0.37	7.0%	3.48	5.4%	N/A	N/A	1.84	3.5%	Incineration in Combination Boilers	Flame Failure System CMS	Source test required by Condition 5 to confirm expected emissions	No corrective actions identified pending source test results
Recovery Furnace #2	0.16	3.0%	0.16	3.0%	0.16	3.0%	0.27	0.4%	0.27	0.5%	0.27	0.5%	Good combustion practices	TRS CEMS	maintain TRS emissions limit and monitoring	No corrective actions identified
Smelt Dissovling Tank #2	0.28	5.4%	0.28	5.3%	0.28	5.3%	0.37	0.6%	0.37	0.7%	0.37	0.7%	scrubber flow and pressure drop	Stack testing and scrubber CMS	Source test being conducted to confirm current emissions	No corrective actions identified pending source test results
Recovery Furnace #3	0.29	5.5%	0.29	5.4%	0.29	5.5%	0.49	0.8%	0.49	0.9%	0.49	0.9%	Good combustion practices	TRS CEMS	maintain TRS emissions limit and monitoring	No corrective actions identified
Smel Dissolving Tank #3	0.51	9.7%	0.51	9.6%	0.51	9.7%	0.67	1.0%	0.67	1.2%	0.67	1.3%	scrubber flow and pressure drop	Stack testing and scrubber CMS	Source test being conducted to confirm current emissions	No corrective actions identified pending source test results
Lime Kiln #2	0.97	18.4%	0.97	18.2%	0.97	18.3%	0.97	1.5%	0.97	1.7%	0.97	1.9%	Good combustion practices	TRS CEMS	maintain TRS emissions limit and monitoring	No corrective actions identified
Causticizing Area	N/A	N/A	N/A	N/A	N/A	N/A	0.40	0.6%	0.40	0.7%	0.40	N/A	none	none	no change in emissions identified	No corrective actions identified
Precipitator Mix Tanks	N/A	N/A	N/A	N/A	N/A	N/A	0.02	0.0%	0.02	0.0%	0.02	N/A	none	none	no vents to atmosphere, sources vent into recovery furnaces	No corrective actions identified
Paper Machine #2	N/A	N/A	N/A	N/A	N/A	N/A	0.75	1.2%	0.75	1.3%	0.75	N/A	none	none	source not currently in operation	No corrective actions identified
Paper Machine #3	N/A	N/A	N/A	N/A	N/A	N/A	3.13	4.8%	3.13	5.6%	3.13	N/A	none	none	Source test required by Condition 5 to confirm expected emissions	No corrective actions identified pending source test results
Pulp Dryer	N/A	N/A	N/A	N/A	N/A	N/A	0.85	1.3%	0.85	1.5%	0.85	N/A	none	none	Source test required by Condition 5 to confirm expected emissions	No corrective actions identified pending source test results
HD Pulp Storage Tanks	N/A	N/A	N/A	N/A	N/A	N/A	9.20	14.2%	9.20	16.4%	9.20	N/A	none	none	no change in emissions identified	No corrective actions identified
LD Pulp Storage Tanks	N/A	N/A	N/A	N/A	N/A	N/A	3.30	5.1%	3.30	5.9%	3.30	N/A	none	none	no change in emissions identified	No corrective actions identified
Weak Black Liquor StorageTanks	0.15	2.9%	0.15	2.9%	0.15	2.9%	1.41	2.2%	1.41	2.5%	1.41	2.7%	none	none	no change in emissions identified	No corrective actions identified
Strong Black Liquor Storage Tanks	0.25	4.6%	0.25	4.6%	0.25	4.6%	1.35	2.1%	1.35	2.4%	1.35	2.6%	none	none	no change in emissions identified	No corrective actions identified
White Liquor Storage Tanks	0.02	0.3%	0.02	0.3%	0.02	0.3%	1.77	2.7%	1.77	3.2%	1.77	3.4%	none	none	no change in emissions identified	No corrective actions identified
Green Liquor Storage Tanks	N/A	N/A	N/A	N/A	N/A	N/A	0.20	0.3%	0.20	0.4%	0.20	0.4%	none	none	no change in emissions identified	No corrective actions identified
ASB Zone 1	0.81	15.4%	1.64	30.7%	1.22	23.2%	17.76	27.4%	21.22	37.8%	15.46	29.7%	none	none	See Condition 7	See Condition 7
ASB Zone 2	0.44	8.4%	0.36	6.8%	0.36	6.7%	9.75	15.0%	4.66	8.3%	4.49	8.6%	none	none	See Condition 7	See Condition 7
ASB Zone 3	0.34	6.5%	0.27	5.2%	0.27	5.1%	7.47	11.5%	3.56	6.3%	3.43	6.6%	none	none	See Condition 7	See Condition 7
TOTAL EMISSIONS (stk + fug)	5.27		5.33		5.28		64.85		56.18		51.98					

7. CORRECTIVE ACTION PLAN – WASTEWATER TREATMENT IMPROVEMENTS NEW-INDY – CATAWBA, SC

7.1 INTRODUCTION

Paragraph 7 of the SC DHEC's May 7, 2021 Order reads:

> On or before June 15, 2021, and to the extent not included in Step 6 above, submit to the Department, for review, comment and approval, a corrective action plan (CAP) (developed and stamped by a South Carolina-registered Professional Engineer (PE)) and a schedule of implementation, which addresses operational issues at the Facility wastewater treatment plant that may be causing or contributing to odor and elevated levels of H_2S. This CAP shall include, but not be limited to, a comprehensive evaluation of the wastewater treatment plant to determine if adequate and appropriate facultative waste treatment is occurring in the aerated stabilization basin (ASB) and the potential for odors resulting from the discharge of foul condensate into the wastewater treatment plant. The CAP shall address the significant fiber and sludge accumulation and foam occurring in the ASB and identify their respective source(s). Additionally, the CAP shall include a study of the microbial concentration in the ASB to determine if there is an adequate microbial population to aid in the reduction of foam on the ASB. The schedule of implementation shall include specific dates or timeframes for initiation and the completion of each action and details as to how each action addresses the odor and wastewater treatment system operational issues noted above. The schedule of implementation of specific corrective action steps proposed under the CAP will be evaluated by the Department and comments provided to New-Indy within five calendar days. New-Indy shall address all comments by the Department and submit a final approvable CAP within five calendar days of Department comment. Upon Department approval, the schedules(s) and corrective actions contained within the CAP shall be incorporated into and become an enforceable part of this Order.

This CAP has been written to meet the requirements of Paragraph 7.

7.2 COMPREHENSIVE EVALUATION OF WASTEWATER TREATMENT SYSTEM

New-Indy retained EBS and TRC to evaluate the wastewater treatment system with regard the following:

- Operational issues that may be causing or contributing to odor and elevated levels of hydrogen sulfide;
- Whether adequate and appropriate waste treatment is occurring in the ASB;
- The potential for odors resulting from the discharge of foul condensate into the treatment system;
- The accumulation of fiber, foam, and sludge accumulation and their sources; and

- A study of the microbial population in the ASB with regard to reducing the fiber layer and providing biological degradation of BOD_5.

New-Indy's wastewater treatment system is comprised of primary bar screening, a primary clarifier, a primary solids EQ basin (historically referred to as the No. 3 sludge basin), the ASB, two treated effluent holding ponds (No. 1 and No. 2 holding ponds), the temporary treated effluent storage basin (No. 5 basin), a tertiary treatment color removal plant (currently out of service), a post-aeration basin, the No. 4 sludge pond, and a multi-port effluent diffuser in the river. The No. 1 sludge pond currently receives backwash and river mud from the mill's raw water filtration plant, and the No. 2 sludge pond is currently out of service.

A wastewater treatment system process flow diagram is provided as Appendix F Over the last several years the process flow diagram has changed, most notably as the management of primary clarifier solids and foul condensates has changed.

Prior to 2016, primary solids were either pumped to the No. 4 sludge pond directly for settling and decanting or were pumped to a sludge dewatering system where the dewatered solids were placed in No. 4 sludge pond. In 2016, clarifier solids were redirected to the EQ basin in an effort to thicken and homogenize the sludge before being excavated through hydraulic dredging and dewatering or long-reach excavators for placement in No. 4 sludge pond. The process flow diagram submitted for NPDES and construction permitting was revised accordingly.

The process flow diagram has also been revised to reflect changes in the way foul condensates have been managed. The original hard pipe was installed in 1999 (as described in Section 3.8.2 above) and conveyed foul condensates to the EQ basin (which at the time was used as a wastewater EQ basin). In 2000, the foul condensate steam stripper was installed as the MACT Subpart S compliance option. The original hard pipe remained in place but was not used for demonstrating compliance with Subpart S. During the mill conversion outage in 2020, a new hard pipe was installed to cell 1 of the ASB to replace the stripper for MACT compliance. This change was not reflected on the process flow diagram submitted to DHEC as part of the September 2019 NPDES permit modification application package reflecting conversion to unbleached operations because at the time, the decision to discontinue use of the stripper had not been made by the mill. The process flow diagram was revised to reflect the new ASB hard pipe in revisions to the mill O&M

manual in May 2021. The current process flow diagram reflecting anticipated wastewater flowrates and current wastewater treatment system layout is included in Appendix F.

7.2.1 Operational issues that may be causing or contributing to odor and elevated levels of hydrogen sulfide

H_2S emissions can originate in a wastewater treatment basin in two ways. The first source of emissions is H_2S that has been produced upstream of the wastewater treatment system and volatilizes when exposed to mixing or agitation in the aeration basin or holding pond. Minimization of this source of H_2S is generally accomplished via subservice diffusion and oxygenation of the wastewater through proper aeration and mixing. The second source of H_2S is the formation of H_2S by sulfate reducing bacteria in unaerated or less aerated areas in the ASB or holding pond.

An aerobic biological treatment system utilizes aeration and bacterial metabolism to convert biodegradable compounds (BOD) in the wastewater into additional bacteria, water, and carbon dioxide, an odorless gas. In the absence of sufficient dissolved oxygen, the bacterial population will shift to a sulfate reducing scenario, where sulfate replaces oxygen as the terminal electron acceptor, with resultant H_2S formation.

TRC performed site visits to the facility on March 17 and March 19, 2021, to observe the conditions of the wastewater treatment system. EBS performed site visits on May 11, May 25, and June 9, 2021, to observe system conditions and to collect process evaluation samples. Discussions regarding EBS's process control data is provided in Section 7.2.2 below, but in general, the conditions observed indicated a floating layer of fiber on portions of the ASB and accumulated solids in the EQ basin. Effluent from the primary clarifier weir appeared typical of effluent from paper mill primary clarifiers.

The predominant issues that have hindered aeration and mixing in the ASB have been the formation of the floating layer of fiber and the accumulation of settled solids. Excess fiber loading into the ASB combined with production liquor losses has led to the formation of a thick, floating layer of fiber and covering areas of the early aerated zone. The fiber and liquors losses arose during mill conversion and recommissioning. The floating solids layer contributed to the breakdown of multiple aerators in the front end of the system. This loss of aeration capacity led to a reduction in biological treatment capacity and resulted in reduced aerobic or anaerobic conditions. Sulfate reducing bacteria when present under anaerobic conditions metabolize BOD by utilizing sulfate as a terminal electron acceptor when there is no dissolved oxygen present, thus producing H_2S as a byproduct. The floating solids also represent biodegradable material that dissolve over time, adding additional oxygen demand to the system.

The accumulated solids in the ASB have reduced the hydraulic residence time in the basin for treatment and impacted the flow path through the basin. Solids accumulation occurs from solids loading in the influent as well as settling of biomass generated as part of normal biological treatment. The influent loading comes from solids that may not have been removed during the primary clarification process or primary solids that have become re-entrained in wastewater due to the primary clarifier underflow in the EQ basin.

The reduced treatment efficiency and less aerated conditions caused by the floating fiber layer and accumulated solids and H_2S production appears to have contributed to elevated concentrations of H_2S in the effluent from the ASB to No. 1 holding pond. No. 1 holding pond retains wastewater prior to undergoing post-treatment aeration in the post-aeration basin. In the post-aeration basin, large surface aerator/mixers aerate the wastewater in a rectangular, concrete basin. This aeration has the potential of releasing hydrogen sulfide that may be in the wastewater.

Additionally, the reduced retention time, inoperable aerators, and biodegradable solids (floating sludge) all may have contributed to higher-than-normal soluble BOD levels in the water leaving the ASB and entering the No. 1 holding pond. While the BOD levels of this water met the requirement for discharge to the receiving stream, the additional BOD served as an oxygen demand in the unaerated No. 1 holding pond, which appears to have resulted in additional sulfate reduction and H_2S formation.

On June 9, 2021, the facility installed a flexible cover, blower and carbon filtration system to capture emissions from the post-aeration basin and treat the off gasses through a carbon filtration system to reduce the H_2S concentration. This is a temporary solution until a permanent solution is identified. Based on initial feedback from New-Indy's consultants, a carbon (or other media) filtration system may not be required in the long-term, depending upon the final conditioning of No. 1 holding pond's contents. Additionally, New-Indy is investigating alternative solutions to media filtration. The ultimate need (or lack of) for treatment at the post aeration basin will be determined by the data collected from the ambient monitoring Station 1. Short-term results continue to indicate that capturing and filtering the air from the post aeration basin is reducing the amount of H_2S at Station 1.

New-Indy has collected isolated grab samples at both the inlet and discharge of the temporary filtration unit to validate its ability to scrub H_2S. However, the unit has been operating for too short a period to draw scientific conclusions. With time, New-Indy will establish valid operating parameters once enough data points are available to establish a baseline. New-Indy is currently measuring the removal efficiency of the filtration system once every two weeks. After the filter has been operating for four months, the testing frequency will increase to every week. Although, the few data points established are helpful in determining the first replacement cycle for the filtration media, which is expected to be after six months of use. New-Indy is also evaluating better media options for extended operation of this temporary system.

The increase of foul condensate loading to the ASB through the hard pipe option under the Title V permit and MACT Subpart S appears to have increased the load of both BOD_5 and sulfur compounds. The loading of the anticipated foul condensate and anticipated wastewater from the converted, unbleached manufacturing operations into the ASB was modeled in 2019 utilizing NCASI's Simulated Aerated Stabilization Basin Model (Version 4.2). The ASB parameters in the model were established using the 2015 solids survey results based on the facility's assumption that additional sludge accumulation since 2015 was approximately equal to the amount of sludge that was removed as part of maintenance dredging since that time. The 2019 modeling indicated that the ASB could sufficiently treat the foul condensate and enable the wastewater treatment system and comply with current (and anticipated) NPDES permit requirements. After the conversion and restarting of the mill, however, the thick layer of fiber formed on the basin reducing the aeration capacity of the basin. This reduced aeration capacity and sludge accumulation that has reduced mixing and disruption of the flow path through the basin have hindered the basin's ability to perform as modeled. The two main operational issues in the ASB that pose the potential of causing or contributing to elevated levels of hydrogen sulfide have been the formation of the floating fiber layer and the accumulation of settled solids. Addressing the floating fiber layer and regaining a portion of treatment volume by removing sufficient solids in strategic areas of the ASB are recommended and included as corrective actions in Section 7.3.

7.2.2 Adequacy and appropriateness of waste treatment that is occurring in the Aerated Stabilization Basin

New-Indy's ASB is of typical design for an integrated pulp and paper mill. An ASB operates by both providing sufficient residence time for biological treatment of organic wastes as well as providing for the settling and digestion of biomass essential to the operation of the basin. An ASB accomplishes biological treatment and sludge digestion through two layers. The upper layer is typically well mixed and aerated with the use of floating aerators. Soluble BOD_5 serves as a food source to microscopic biota in this upper layer thus reducing the BOD_5 concentration in the wastewater. As the BOD_5 is consumed, additional biomass is produced to continue the treatment process.

As biomass accumulates in the lower layer, some of the solids settle to the basin bottom and begin to undergo digestion in anoxic conditions, which are by design out of reach of the aeration and mixing energy from the surface aerators. As the biomass degrades, it releases some BOD_5 and nutrients. As this layer is anaerobic, there is the potential for H_2S to form. NCASI's Technical Bulletin No. 1000 discusses H_2S formation in the bottom, anaerobic layer. *See* "Mechanistic Approach for Estimating Hydrogen Sulfide Emissions from Wastewater Treatment Plants" (December 2012). As described in the Technical Bulletin, H_2S can form in the pore water of the settled sludge in this anaerobic layer because of low oxygen conditions and the presence of sulfates and organic matter. The fractionation between H_2S and HS- is pH dependent, as pH increases less H_2S is formed. H_2S is highly soluble in water. During normal operations with a well aerated upper layer, the soluble H_2S is oxidized in the upper, aerobic layer of the ASB. Some H_2S formed in the bottom layer can also become entrained in bubbles formed from the digestion of sludge. These bubbles can reach the surface but are mostly comprised of methane, carbon dioxide, and nitrogen with only trace amounts of H_2S.

Along with H_2S, BOD_5 released during sludge digestion gets treated in the upper layer, and nutrients released during sludge digestion are reused in the process to support continued biomass growth. This release of nutrients and BOD_5 from the degradation of biomass at the bottom is referred to as "benthic feedback" and is an important step in the ASB treatment process. Not all the biomass that settles to the basin bottom digests, and this accumulated sludge can begin reducing the working volume of the basin thus reducing the residence time for treatment.

Unlike an activated sludge system that concentrates biomass in the mixed liquor through the return of a portion of settled secondary sludge, an ASB operates with a much lower density of biomass and achieves high removal efficiencies, not through high concentrations of mixed liquor biomass but instead through extended residence times. The large volumes of typical ASBs that provide the high residence time for treatment also make ASBs less susceptible to slug discharges of high organic strength, pH swings, and hydraulic loading spikes that can plague activated sludge systems. In addition, by design, ASBs generate less sludge for disposal than activated sludge systems and require less energy to operate. ASBs also require less nutrient loading because of the inherent "benthic feedback" nutrient recycle process.

New-Indy has routinely collected samples from the ASB influent, effluent and within the ASB for process control parameters such as BOD_5, TSS, pH and temperature. A summary of this data is provided as follows:

- February 2021:
  - ASB Inlet
    - Monthly Average Flow: 26 MGD
    - Monthly Average Total BOD Concentration: 407 mg/L
    - Monthly Average Filtered BOD Concentration: 369 mg/L
    - Monthly Average Temperature: 95 °F
    - Monthly pH Range: 5.8 – 10.5 s.u.
  - ASB Outlet
    - Monthly Average Total BOD Concentration: 146 mg/L
    - Monthly Filtered BOD Average Concentration: 102 mg/L
    - Monthly Average Temperature: 75 °F

- Monthly pH Range: 6.7 – 7.5 s.u.

- March 2021:
  - ASB Inlet
    - Monthly Average Flow: 26 MGD
    - Monthly Average Total BOD Concentration: 407 mg/L
    - Monthly Average Filtered BOD Concentration: 364 mg/L
    - Monthly Average Temperature: 101 °F
    - Monthly pH Range: 7.9 – 10.2 s.u.
  - ASB Outlet
    - Monthly Average Total BOD Concentration: 143 mg/L
    - Monthly Filtered BOD Average Concentration: 132 mg/L
    - Monthly Average Temperature: 82 °F
    - Monthly pH Range: 7.0 – 7.8 s.u.
- April 2021:
  - ASB Inlet
    - Monthly Average Flow: 25 MGD
    - Monthly Average Total BOD Concentration: 578 mg/L
    - Monthly Average Filtered BOD Concentration: 476 mg/L
    - Monthly Average Temperature: 101 °F
    - Monthly pH Range: 7.1 – 10.9 s.u.
  - ASB Outlet
    - Monthly Average Total BOD Concentration: 181 mg/L
    - Monthly Filtered BOD Average Concentration: 146 mg/L

    - Monthly Average Temperature: 87 °F
    - Monthly pH Range: 7.3 – 7.9 s.u.

- May 2021:
  - ASB Inlet
    - Monthly Average Flow: 27 MGD
    - Monthly Average Total BOD Concentration: 333 mg/L
    - Monthly Average Filtered BOD Concentration: 276 mg/L
    - Monthly Average Temperature: 106 °F
    - Monthly pH Range: 6.9 – 9.8 s.u.
  - ASB Outlet
    - Monthly Average Total BOD Concentration: 71 mg/L
    - Monthly Filtered BOD Average Concentration: 40 mg/L
    - Monthly Average Temperature: 83 °F
    - Monthly pH Range: 7.4 – 8.6 s.u.
- June 2021:
  - ASB Inlet
    - Monthly Average Flow: 26 MGD
    - Monthly Average Total BOD Concentration: 324 mg/L
    - Monthly Average Filtered BOD Concentration: 282 mg/L
    - Monthly Average Temperature: 109 °F
    - Monthly pH Range: 5.7 – 10.2 s.u.
  - ASB Outlet
    - Monthly Average Total BOD Concentration: 55 mg/L

- o Monthly Filtered BOD Average Concentration: 37 mg/L
- o Monthly Average Temperature: 88 °F
- o Monthly pH Range: 7.2 – 8.9 s.u.

- July 2021 (available as of July 9, 2021):
  - ASB Inlet
    - o Monthly Average Flow: 24 MGD
    - o Monthly Average Total BOD Concentration: 216 mg/L
    - o Monthly Average Filtered BOD Concentration: 197 mg/L
    - o Monthly Average Temperature: 108 °F
    - o Monthly pH Range: 7.2 – 10.0 s.u.
  - ASB Outlet
    - o Monthly Average Total BOD Concentration: 21 mg/L
    - o Monthly Filtered BOD Average Concentration: (no data available yet)
    - o Monthly Average Temperature: 85 °F
    - o Monthly pH Range: 7.3 – 7.5 s.u.

As part of preparations for full scale unbleached operations and foul condensate hard pipe loading, New-Indy revised the ASB sampling regimen to include methanol sampling as well as sampling of the foul condensate stream in January 2021.

In terms of BOD loading to the ASB, the conversion from bleached paper to unbleached containerboard included two considerations for determining the ASB's ability to support the converted mill operations. Although the planned hard pipe solution would result in a higher loading of BOD to the ASB from the chemical recovery operations, the overall BOD loading to the ASB would not change due to correspondingly reduced BOD loading from the paper operation (elimination of starch, coatings and sub-sized fibrous "fines" from the paper machine operation). By design, this validated the decision to implement the hard pipe solution for methanol destruction, as the ASB would continue to be more than adequate to treat the planned post-construction BOD loading.

The mill experienced a more difficult operational startup than was anticipated. Additional factors that complicated the wastewater treatment plant startup conditions were the time of year (cold weather) and an anomalous influx of solids from the EQ basin (because the primary clarifier was out of service). The normal flow of effluent from the primary clarifier is to route the underflow sludge to the EQ basin for solids settling with the clarifier overflow going directly to the ASB inlet. With the primary clarifier out of service for rake repairs, all mill effluent was routed through the EQ basin, which resulted in a hydraulic washing of solids from that basin into the ASB. Fiber losses from the mill's operational startup compounded the buildup of solids in the ASB. The fibrous sludge floated and matted on the ASB surface, which caused certain of the surface aerators to shut down. The floating solids mat then built to the point where access to the aerators was inhibited, and the aerators could not be returned to service quickly. This situation was further exacerbated by extremely wet weather in January through March 2021, which resulted in restricted access to the No. 4 sludge holding pond, thus preventing solids removal from the ASB surface until March 2021. Therefore, the ASB's reduced aeration efficiency was a primary factor in creating treatment inefficiencies through the ASB.

New-Indy retained EBS to evaluate the treatment system in May 2021. EBS collected samples from the ASB inlet, effluent, ASB midpoint and from the No. 1 holding pond and analyzed for pH, temperature, dissolved oxygen, Oxidation-Reduction Potential (ORP), ammonia, ortho-phosphate, Sulfide, dissolved oxygen uptake rate, TSS, Volatile Suspended Solids (VSS) and Chemical Oxygen Demand (COD). These samples were collected on May 11, May 25 and June 9, 2021. Continued sampling is conducted weekly going forward. EBS also evaluated the microbiology of samples from the ASB midpoint and ASB effluent during each sampling event, and the details of the microbiology evaluation are discussed more in Section 7.2.5. The complete EBS reports are provided in Appendix G but are summarized below for COD removal along with estimates of loading calculated by TRC based on information provided by the facility and EBS.

- May 11, 2021 EBS Evaluation:

- Wastewater flow into the ASB (minus foul condensate) was recorded at 27.4 MGD, the measured soluble COD in that influent (minus foul condensate) was 873 mg/L, giving a soluble COD loading in the ASB influent (minus foul condensate) of approximately 200,000 pounds per day (lbs./day).

- The foul condensate hard pipe flow that day was approximately 0.158 MGD. The COD of the foul condensate was not measured that day, but the average from the four measurements collected that month was approximately 3,850 mg/L for total COD, giving a COD loading of approximately 5,100 lbs./day from the foul condensate.

- The total influent COD loading was approximately 205,100 lbs./day.

- The ASB effluent soluble COD concentration that day was 510 mg/L, giving an approximate mass loading from the ASB of 117,200 lbs./day, or a removal efficiency of approximately 43%.

• May 25, 2021 EBS Evaluation:

  - Wastewater flow into the ASB (minus foul condensate) was recorded at 30 MGD, the measured soluble COD in that influent (minus foul condensate) was 1303 mg/L, giving a soluble COD loading in the ASB influent (minus foul condensate) of approximately 326,000 pounds per day (lbs./day).

  - The foul condensate hard pipe flow that day was approximately 0.307 MGD. The COD of the foul condensate that day was measured to be 4,300 mg/L for total COD, giving a COD loading of approximately 11,000 lbs./day from the foul condensate.

  - The total influent COD loading was approximately 337,000 lbs./day.

  - The ASB effluent soluble COD concentration that day was 231 mg/L, giving an approximate mass loading from the ASB of 58,388 lbs./day, or a removal efficiency of approximately 83%.

• June 9, 2021 EBS Evaluation:

  - Wastewater flow into the ASB (minus foul condensate) was recorded at 29.4 MGD, the measured soluble COD in that influent (minus foul condensate) was 1,059 mg/L, giving a soluble COD loading in the ASB influent (minus foul condensate) of approximately 260,000 pounds per day (lbs./day).

  - The foul condensate hard pipe flow that day was approximately 0.307 MGD. A total COD value for the foul condensate was not available for that day as of the writing of this CAP; therefore, the average of the previous three measurements was used (4,733 mg/L), giving a COD loading of approximately 16,600 lbs./day from the foul condensate.

- The total influent COD loading was approximately 276,000 lbs./day.

- The ASB effluent soluble COD concentration that day was 376 mg/L, giving an approximate mass loading from the ASB of 93,500 lbs./day, or a removal efficiency of approximately 66%.

Figure 7-1 tracks soluble BOD removal in the ASB since January 2021. The soluble BOD concentrations in the ASB effluent have been less than 40 mg/L for the last month. Historically, the ASB has generally removed greater than 85% of the influent BOD. The ASB is capable of treating mill wastewater as demonstrated by historical sampling and modeling. A properly operated and maintained primary clarifier, ASB and treated effluent retaining capabilities along with management and disposal of primary clarifier solids is an appropriate treatment regimen and can provide adequate treatment for this type of wastewater to enable compliance with the NPDES permit. Continued efforts to address the floating fiber layer, strategic maintenance dredging, and continuing the revised monitoring of ASB process control parameters is recommended and included as corrective actions in Section 7.3.

COD is commonly used in the pulp and paper industry as a "surrogate test" for BOD, as BOD is a 5-day test, and the time delay makes it impractical to be used for process control. BOD_5 is a measure of the amount of oxygen required to biologically oxidize the organic material in the wastewater within a 5-day period and is the standard parameter for determining effective biological treatment. COD is a measure of all the material that can be chemically oxidized and includes organic materials that are not readily biodegradable, such as lignins and tannins, and inorganic reducing compounds, such as H2S and TRS compounds. The COD test takes 2 – 3 hours to complete providing same-day results, which are particularly valuable in determining the occurrence and magnitude of sudden loading spikes. While the correlation between COD and BOD_5 has limitations, its utilization supports proactive responses to prevent a release from passing through the ASB unaddressed.

COD is always greater than the BOD. Because there is considerable color in pulp and paper wastewater, there is typically a portion of the COD that will always be present in the wastewater even when the soluble BOD concentration is very low. For example, it is common for a treated kraft mill effluent to have a soluble COD of 200-400 mg/L and a soluble BOD of 20-40 mg/L.

The fraction of COD that is due to color is fairly constant from the influent to the effluent, and a large fraction of the change in soluble COD is due to soluble BOD removal. Due to this reality, mills generally monitor the delta/change in soluble COD across the system as an indication of BOD conversion rather than focus on absolute BOD or COD values. Previous research has shown that the ratio of biodegradable COD to BOD is approximately 1.7:1. Therefore, if the influent soluble COD is 900 mg/L, and the effluent soluble COD is 250 mg/L, then approximately 650 mg/L of soluble COD was removed, and 382 mg/L of BOD was removed in the treatment system.

7.2.3 The potential for odors resulting from the discharge of foul condensate into the treatment system

The foul condensate represents an organic and sulfide load to the ASB. In a system facing aeration challenges due to the floating fiber layer and lost volume due to solids accumulation, this additional organic loading can exacerbate the aeration challenges leading to less aerobic or anaerobic conditions. These conditions can cause the bacteria population to shift to sulfate reducing bacteria where sulfate replaces oxygen as the terminal electron acceptor resulting in H_2S formation. The additional sulfide from the foul condensate provides an additional sulfur source to the system. Improving conditions in the ASB, including addressing the floating fiber layer and regaining treatment volume through removal of solids will improve the ability of the ASB to treat foul condensate in an aerobic environment reducing the biological factors that contribute to the formation of H_2S.

The 2019 ASB modeling of the loading from the unbleached mill operations and the full foul condensate loading indicated the ASB as modeled could meet the oxygen demand requirements of BOD_5 in maintaining aerobic conditions in the upper pond layer as designed. H_2S emissions was estimated using NCASI's Wastewater Hydrogen Sulfide Emissions Simulator (H2SSIM, version 1.3) in January 2020. As with the 2019 ASB modeling, the ASB inputs were based on anticipated wastewater and H_2S loading and that the accumulated solids conditions in January 2020 were approximately the same as those observed in 2015 based on the facility's assumption that additional accumulation was approximately equal to the amount of solids removed through maintenance dredging conducted since 2015. That modeling indicated that based on the assumptions and inputs used, the additional emissions of hydrogen sulfide with the addition of the full condensate stream would be less than 1 ton per year.

With the understanding that ASB conditions have changed since early 2020 when the H_2S modeling was performed and that there is actual data for the foul condensate and process wastewater characteristics from unbleached operations, additional ASB treatment and H_2S emissions modeling is recommended and included as part of the corrective actions in Section 7.3.

7.2.4 The accumulation of fiber and sludge and their sources

As discussed above, the formation of the floating layer of fiber has contributed to the reduction in aeration and mixing capacity in the ASB, while accumulated sludge has impacted the flow path of wastewater through the basin and reduced the effectiveness of mixing and aeration in the basin. The floating layer is a combination of excessive fiber in the wastewater and foaming caused by production liquors, fatty acid soaps, and cellulose breakdown products. Production upsets during recommissioning contributed to the high losses of fiber and production material the facility's process sewer system. Addressing fiber and process liquor losses in the mill is recommended and included as corrective actions in Section 7.3.

The accumulation of sludge in the ASB is a result of elevated primary solids loading in the influent to the ASB and biomass generation from BOD_5 treatment. The source of the elevated solids in the influent flow is from solids being entrained in effluent from the primary solids EQ basin. Sludge from the primary clarifier is pumped to the EQ basin to thicken and homogenize before being removed and placed in the No. 4 sludge pond. If the solids are not removed frequently, suspended solids can be entrained in the supernatant that leaves the EQ basin into the ASB inlet ditch ultimately settling out in the ASB. While the use of the EQ basin served as a means of addressing primary sludge dewatering issues, ultimately managing primary solids in an alternative manner is recommended and is included as corrective action in Section 7.3.

Biomass generated in the ASB during the BOD_5 treatment process settles to the basin bottom and undergoes digestion. Digestion alone does not eliminate the solids, as some of it is inert, so maintenance dredging must be performed to manage accumulation. If maintenance dredging does not keep up with the accumulation of solids in the basin, the settled solids will begin reducing the working volume of the basin available for treatment. Increasing the maintenance dredging program in the ASB, and even dredging to recover lost volume to regain sufficient treatment volume, is recommended and is included as corrective action in Section 7.3.

7.2.5 A study of the microbial population in the ASB with regards to reducing the fiber layer and providing biological degradation of BOD_5

As part of their evaluations on May 11, May 25, and June 9, 2021, EBS performed microscopic examinations. Their reports can be found in Appendix G and are summarized with regards to the microscopic exams below.

- May 11, 2021 EBS Evaluation: The micro exam showed a moderate to high abundance of dispersed bacteria in the ASB Midpoint and ASB Effluent samples, as well as a moderate abundance of pin floc in both samples. No higher life forms (protozoa/metazoa) were observed at the ASB Midpoint, but the ASB Effluent showed several flagellates and a few free-swimming ciliates. Ciliates are generally considered indicators of aerobic, non-toxic conditions in ASB treatment systems. A low to moderate abundance of fiber was observed at the ASB midpoint sample, and a moderate abundance of grit and debris were observed in both samples.

- May 25, 2021 EBS Evaluation: The micro exam showed higher life forms (protozoa) in both the ASB midpoint and ASB Effluent. Two stalked ciliates were observed at the ASB Midpoint: these are sensitive microorganisms that generally exist in non-toxic, aerobic environments. Two free swimming ciliates were observed at the ASB Outfall as well. The ASB midpoint sample showed a high abundance of grit and debris, as well as pin floc and a few small compact pieces of floc. There was no floc larger than pin floc observed at the ASB Outfall, and the abundance of grit/debris decreased in this sample. Dispersed bacteria abundance was high in the midpoint (2.5 out of 3) and moderate to high in the ASB Effluent (2 out of 3).

- June 9, 2021 EBS Evaluation: The micro exam showed stalked ciliates and free-swimming ciliates at the ASB Mid and ASB Out sample points. Stalked ciliates are generally considered indicators of good biomass health, as they are sensitive microorganisms that don't survive in toxic or anaerobic conditions. There was abundant grit and debris observed in the ASB Mid sample, with the abundance decreasing in the ASB Out sample. This corresponds with the lower percent VSS (volatile suspended solids) observed in the ASB Mid sample, as there is a higher fraction of inorganic grit/debris in this part of the ASB.

The terms "several" and "few" are used above because in evaluating the biomass in ASBs, the microscopic examinations are typically conducted to evaluate the "quality" of the biomass, not the "quantity." The purpose of the microscopic exams is to look at floc size and structure, the abundance of flocculated bacteria versus dispersed bacteria, and the abundance of protozoa and metazoa which are sensitive "indicator" organisms, which provide clues into the biological and environmental conditions in the wastewater pond. Stalked ciliates and free swimming ciliates have been commonly observed in recent microscopic exams at the ASB midpoint. These organisms feed on the bacteria in the water and are sensitive to low dissolved oxygen and toxic conditions. In addition to the qualitative assessments used to analyze data, EBS also utilizes a Maturity Index to better quantify changes in the microbial population (indicator organisms). Now that the system has stabilized microbiologically, EBS will implement the Maturity Index in the near future.

Evaluating biomass quantity is typically done with Total Suspended Solids (TSS), Volatile Suspended Solids (VSS) testing, and culturable cell counts. TSS is the measure of the concentration of all solids in the water that are greater than 1.5 microns. The VSS test burns off all organic material from the TSS filter pad, to show what fraction of the TSS solids is organic in nature. The concentration of organic solids in the ASB is generally equated to the biomass concentration in the water. It should be noted that if there is abundant fiber in a sample, then the fiber will also register as VSS and be a confounding variable in measuring the biomass concentration. Over the last several EBS service visits, the VSS at the ASB midpoint sample has been between 130 mg/L and 210 mg/L, which is within a normal range observed in ASB systems in the pulp and paper industry. New-Indy has begun utilizing EBS to conduct weekly culturable counts starting the week of June 21, 2021, which will provide counts of all viable bacteria in the wastewater.

As discussed, ASBs do not have the highly concentrated population of microbial life in the mixed liquor that activated sludge systems require for treatment.

Continued evaluations of the ASB mixed liquor microbiology is recommended along with continuous, in situ biomonitoring, and are included to support corrective actions in Section 7.3.

7.3 CORRECTIVE ACTIONS AND TIMELINE

An aerobic biological treatment system utilizes aeration and bacterial metabolism to convert biodegradable compounds (BOD) in the wastewater into additional bacteria, water, and carbon dioxide, an odorless gas. In the absence of sufficient dissolved oxygen, the bacterial population can shift to a sulfate reducing scenario, where sulfate replaces oxygen as the terminal electron acceptor resulting in H_2S formation. The floating layer of fiber appears to have contributed to the reduction in aeration and mixing capacity in the ASB. The accumulation of settled solids in the ASB appears to have contributed to the reduction in treatment residence time, reduced mixing efficiency, and altered the flow path of wastewater undergoing treatment through the ASB.

The ASB previously contained curtains to direct the flow of water within the basin. They reportedly were frail and tore from the support cables sometime prior to 2011. The curtains cannot be installed until more than ~ >10 feet of free water exists over the entire basin, requiring a removal of 750,000 – 1,000,000 cubic yards of sludge if the entire basin is to be used for treatment, although that is not necessary for sufficient treatment. Replacement of the curtains also may not be necessary as serpentine flow can be re-established with less sludge removal and the use of directional mixers. The following corrective actions have been developed to address these operational issues. Successful actions will be included in the mill's odor abatement plan as responses to be considered for implementation in the event elevated odors become an issue in the future.

This corrective action plan employs the concept of the Eight Growth Pressures necessary for optimum aerobic metabolism as outlined in "Aerated Stabilization Basins in the Pulp and Paper Industry" by Paul Klopping and Michael Foster published in 2003. Each of the eight growth pressures (BOD Loading, pH, Hydraulic Retention Time, Dissolved Oxygen, Nutrients, Temperature, Toxicity, and Biomass Viability) play a role in the health of a system with BOD Loading, Dissolved Oxygen, pH, Temperature, and Hydraulic Retention Time being most impactful in terms of H_2S formation and emission. The intent of this document is to provide a corrective action plan to improve the health of the wastewater treatment system and mitigate H_2S formation. At this time, it is too early to define exact timelines and deadlines for many of the included corrective actions, as they are dependent on the completion of other identified corrective actions and require long-term financial planning. Additionally, the success of initial actions may eliminate the need for other potential actions that have been identified below. Finally, many of the corrective actions identified below are actions that will be investigated to determine if they are necessary or the best action for the mill to take.

Item 1: Removal of Floating Solids in the Aerated Stabilization Basin (ASB)

Basic Description:

- Remove floating solids in the ASB. Floating solids removal will allow access to out-of-commission aerators.

Technical Rationale:

- Excess fiber loading into the ASB has led to floating solids covering much of the early aerated zone. The floating solids have contributed to the breakdown of multiple aerators in the front end of the system. Removal of these solids will be necessary to repair the aerators, which will lead to higher BOD removal efficiency, more aerobic conditions in the wastewater treatment system and reduce the potential for H_2S formation. The floating solids also represent biodegradable material that dissolve over time, adding additional oxygen demand to the system.
- The removal of surface solids has been ongoing for some time. Upcoming activities are extensions of this continuing and well-established solids removal process. Although very short-term spikes are possible when disturbing the oldest solids area, this potential is mitigated with the addition of peroxide, oxygen, and calcium nitrate and bringing additional aerators online. As a precaution, employees are equipped with personal H_2S monitors and are capable of demobilizing should temporary spikes in H_2S make this necessary. Property boundary H_2S monitoring stations near the ASB at Stations 2 and 3 have not indicated any appreciable off-site data from the ongoing solids removal process.

Timeline:

- Long arm excavators are currently removing solids that can be reached from shore. In addition, two other contracting firms will begin work over the next weeks to remove the floating solids from barge and vessel-based equipment. The floating solids are expected to be sufficiently mitigated on or before September 1, 2021.

- Fiber and liquor losses in production may have contributed to the formation of the floating fiber layer. The causes and remedies for these fiber and liquor losses will be investigated as a corrective action. This evaluation occurs daily and will be permanently ongoing. The previous quantity of fiber and liquor loss from start-up following the process conversion is not expected to be repeated as the mill progresses toward steady-state operations.
- Install two Turbulator, high speed floating mixers within cell 1 of the ASB as part of a pilot study to evaluate the performance of the two mixers to help break up the floating fiber layer and improve mixing in the first part of the ASB in cell 1. The pilot study for this project was approved by DHEC on June 8, 2021 and can continue through December 31, 2021. During the study, New-Indy will evaluate the effect on breaking up the floating layer of fiber facilitating easier removal by mechanical excavators. New-Indy will also observe the impact on physically observable mixing within cell 1. The Turbulator mixers have an 8-10 week lead time and with DHEC approval, they can now be ordered.

Item 2: Removal of Settled Solids in the Aerated Stabilization Basin (ASB)

Basic Description:

- Remove sufficient settled solids in the ASB to meet treatment and sludge management needs. Dredging settled sludge will improve the hydraulic retention time of the ASB, improve mixing, and the flow path through the ASB. In addition, a sludge accumulation rate needs to be estimated to plan maintenance dredging rates to outpace accumulation.

- A portion of newly generated sludge is currently being moved from the EQ basin and the ASB to the No. 4 sludge pond to ensure proper operation of the ASB while pilot projects are being conducted and evaluated. Long term sludge disposal will depend on potential wastewater treatment system modifications that may impact ASB operation and sludge volume. Current sludge movement is not related to management of dioxin-containing sludge under the Voluntary Cleanup Contract (VCC). An environmental risk assessment is currently being performed to determine potential risks to human health and the environment associated with movement of the dioxin-containing sludge. New-Indy will provide DHEC with the risk assessment assumptions by July 15, 2021. The volume of solids to be removed is currently under analysis as part of the VCC. Upon completion of this study, sludge management plans will be presented to DHEC for approval.

- All sludge that is currently being placed in the No. 4 sludge pond and sludge that may be placed in the No. 4 sludge pond in the future, whether it be recently generated sludge or dioxin-containing sludge associated with the VCC, will remain in the No. 4 sludge pond. New-Indy intends to close the No. 4 sludge pond upon completion of sludge placement. Geotechnical studies performed on the No. 4 sludge pond berm and existing sludge indicated that they are stable and capable of accepting the placement of additional sludge. Closure of Sludge Lagoon 4 will be completed in accordance with the VCC following the completion of the risk assessment, expected in October of 2021, and DHEC's acceptance. Compliance with the VCC is separate from the efforts the mill is taking to address the odor issues. Additionally, New-Indy will comply with the other agreed upon requirements in the VCC.

Technical Rationale:

- Settled solids removal will be necessary to provide additional retention time for BOD removal. Additional volume in the ASB will be created by dredging solids from the bottom of the basin.
- The excess sludge inventory is one of several interrelated drivers that impact not only the potential formation of H_2S and other odorous compounds, but also the overall performance of the wastewater treatment system in terms of meeting normal NPDES compliance for TSS and BOD. New-Indy will be evaluating the system from a comprehensive perspective with the intent of determining the proper conditions that must be achieved and maintained to meet both routine discharge compliance and acceptable air emission targets. This includes volume requirements of the holding pond and ASB, aeration and mixing requirements, and Layers of Protection, such as in basin monitoring and supplemental additives (CN9, hydrogen peroxide, ferric sulfate, nutrients, and/or bacterial formulations).

Timeline:

- Long arm excavators began removing solids that can be reached from shore in March 2021 and will continue until removal is completed.
- Sludge maintenance dredging is ongoing. The facility is currently in the process of identifying a dredging contractor(s) that can dredge at a faster rate.

- EBS began a lithium tracer study on June 8, 2021 to determine the hydraulic retention time of the ASB. In addition, lithium profile samples were collected throughout the ASB five and twenty-four hours after the lithium was introduced to determine the current flow patterns.
  - Preliminary results from the lithium profile sampling were received on July 6, 2021. The mill will submit the complete results once they have been received.
- Perform ASB modeling using up-to-date information regarding the ASB to guide settled solids removal actions. This modeling will include an evaluation of the ASB as a long-term treatment alternative for managing foul condensate including evaluating the formation of H_2S as compared to use of the steam stripper.
- Periodic dredging and excavation activities have been performed in the ASB. A summary of settled solids removed from the ASB since 2015 is provided in Appendix H.

Item 3: Primary Clarifier Sludge Handling Improvements

Basic Description:

- While solids removal from the ASB is important, it will be subsequently important to ensure solids loading is minimized in the future. Improving primary clarification and preventing dumps of process solids that bypass or overwhelm the primary clarifier will decrease the amount of fiber and other solids that are entering the ASB from the mill. In the short term, this can be mitigated by dredging the EQ basin into which the underflow of the primary clarifier feeds. In the long term, the underflow of the primary clarifier will be pressed and removed from the wastewater treatment system. Reducing non-wastewater loads of solids to the primary clarifier, such as boiler ash, lime mud, grits and slaker dregs will also reduce the solids loading.

Technical Rationale:

- The underflow of the primary clarifier is currently feeding into an EQ basin that has a significant accumulation of solids. The lack of settling volume in the EQ basin appears to be leading to elevated TSS entering the ASB. These solids will settle in the ASB and reduce the hydraulic retention time. Especially during/after dredging, this will be important as the volume gained from dredging will be quickly cancelled out if influent solids are not reduced.

- Keeping primary sludge removed in the clarifier from becoming remixed with wastewater is important.
- Mechanical dewatering through the use of a belt press is essential to improving the solids removal.
- Returning the EQ basin to use for attenuating hydraulic and concentration swings in the primary clarifier effluent will provide a more evenly distributed loading to the ASB.

Timeline:

- Periodic dredging and excavation events have been performed in the EQ basin since prior to 2016 when the basin was used for clarifier overflow and since 2016 when the basin was converted into a primary sludge EQ basin. A summary of settled solids removed from the EQ basin since 2015 is provided in Appendix H.

- The long-term plan for pressing and removing the sludge from the primary clarifier is a major project that does not currently have an estimated timeline.
- The mill does not yet have a timeline for reducing the non-wastewater loads to the primary clarifier.
- New-Indy will investigate as a corrective action the proper handling method for the non-wastewater loads that will no longer be sent to the primary clarifier. New-Indy has determined that the non-wastewater loads being sent to the primary clarifier do not cause H_2S emissions. Therefore, this investigation is no longer necessary to address the odor issues.

<u>Item 4: Existing Aeration Repair</u>

Basic Description:

- Repair out-of-commission splash aerators in the north end of the ASB.

Technical Rationale:

- Each hp of aeration in the ASB theoretically removes 25-35 lbs. of BOD per day. Using the midpoint of 30 lbs. of BOD removal per hp, each 75 hp splash aerator that is repaired will remove approximately 2,250 lbs. of additional BOD per day. Sulfate reducing bacteria when present under anaerobic conditions metabolize BOD by utilizing sulfate as a terminal electron acceptor when there is no dissolved oxygen present and produce H_2S as a byproduct. Repairing aerators will decrease the oxygen demand in the ASB and No. 1 holding pond, promoting the growth of aerobic bacteria and reduce the conditions favorable to sulfate-reducing bacteria.

Timeline:

- Aerator repairs are ongoing.
- On June 18, 2021 the next phase of surface solids removal was initiated, utilizing two excavator barges to remove the solids in the middle of the north end of the basin. This process allows maintenance personnel to access the non-functioning aerators and return them to service.
- As of June 25, 2021, there are 38 aerators operating.
- On April 19, 2021, New-Indy began adding ammonium calcium nitrate in the ASB to supplement oxygen as an electronic acceptor and reduce the formation of hydrogen sulfide. The mill stopped adding calcium nitrate to the ASB on June 30, 2021 because the need was eliminated after additional aerators came online and the addition of hydrogen peroxide and liquid oxygen proved successful.
- On June 9, 2021, New-Indy began adding hydrogen peroxide and supplemental oxygen to the ASB inlet as part of a pilot study to provide supplemental dissolved oxygen until aerators can be returned to service. DHEC provided initial approval of the pilot study via email on June 7, 2021. The pilot study request and DHEC approval are provided in Appendix E.
- A Letter of Approval for the pilot study was issued on June 17, 2021. The pilot study is approved until October 31, 2021. During this study New-Indy will regularly measure the dissolved oxygen and sulfide concentrations within the ASB and at the ASB effluent. The feed rate of hydrogen peroxide and oxygen may be adjusted as part of the study and will be discontinued when sufficient mechanical aerators are returned to service. The threshold for sufficient surface aerators in service will be evaluated during the pilot study by

monitoring the BOD_5 removal efficiency across the basin and measuring the dissolved oxygen and sulfide concentrations within and leaving the ASB.

<u>Item 5: Add Aeration to No. 1 Holding Pond</u>

Basic Description:

- Add two 75 hp splash aerators to the front end of the No. 1 holding pond.
- The No. 1 holding pond chemistry and operation continue to be investigated. There has been minimal historical testing on this pond, as there is typically minimal treatment across a holding pond. The intent is for this basin to serve as a holding reservoir in times when the Catawba River flows are low, restricting the volume of the mill's discharge. New-Indy's initial focus was to measure the sulfide ion content and dissolved oxygen level at the discharge of the basin. The results of this investigation led to a proactive program of installing two aerators, feeding ferric chloride to the influent to the pond, and establishing a hydrogen peroxide system at the pond outlet structure to control sulfide generation and increase dissolved oxygen levels in the pond.
- No. 1 holding pond appears to be off-gassing H_2S for two reasons which result in sulfides forming or releasing into the water column of the holding pond where the potential for release to the atmosphere is a function of pH, temperature, turbulence, and dissolved oxygen/ oxidation-reduction potential of the water column.
    - Sulfate reducing bacteria utilizing sulfate as the terminal election acceptor (TEA) instead of dissolved oxygen to degrade the remaining BOD that remains in the water column after treatment in the ASB. The preferred TEA for aerobic treatment, such as an ASB, is dissolved oxygen which produces carbon dioxide as a byproduct.
    - The sludge layer in a basin (aerated or not) is generally anaerobic and constantly in a state of digestion, which is expected and desirable when the system is operating under acceptable loading rates, etc.
- EBS performed sulfide testing on the No. 1 holding pond effluent on May 25, 2021 with a result of 1.94 mg/L, June 9, 2021 with a result of 2.5 mg/L, and June 17, 2021 with a result of 2.2 mg/L.

- New-Indy grabbed water samples at the No. 1 holding pond and outfall 001 on June 23, 2021 for sulfides, sulfates, and sulfites analysis at Pace Labs. The results were provided to DHEC at the end of June.

Technical Rationale:

- Adding additional aerators to the No. 1 holding pond will provide additional dissolved oxygen that will reduce the potential for H_2S formation from sulfate reducing bacteria. These aerators will be installed in the early zones of the No. 1 holding pond to prevent stirring up solids before the outfall. The permanent need for these will be evaluated as treatment efficiencies improve in the ASB.
- Because of the complexity, variability, and site specificity of this situation, there is a learning curve regarding the relative impact of the various driving forces. However, New-Indy is taking numerous actions to minimize the H_2S formation in the pond and potential for air emissions, including:
    - Utilizing supplements such as alternate TEA's (nitrate and peroxide) and sulfide scavengers (ferric salts),
    - Reducing the oxygen demand in the No. 1 holding pond by reducing the soluble BOD leaving the ASB, which has been decreasing over the past few months,
    - Adding aeration and mixing to reduce anaerobic zones in the No. 1 holding pond, and
    - Reducing sludge inventory in the No.1 holding pond.

Timeline:

- Two 75 hp splash aerators were installed June 9, 2021 as part of a pilot study to evaluate the impact of the aeration on basin dissolved oxygen. They were installed near the inlet of No. 1 Holding Pond along the eastern berm.
- The pilot study was approved on June 9, 2021 and can run until December 31, 2021. During the pilot study, New-Indy will regularly measure organic loading, dissolved oxygen, and H_2S concentrations in the inlet to the No. 1 holding pond, dissolved oxygen and H_2S within the No. 1 holding pond, and dissolved oxygen and H_2S at the outlet from the No. 1 holding pond to the post-aeration basin. The study may be discontinued early

based on factors such as the organic loading and dissolved oxygen concentrations in the inlet to the holding pond, the water level within the pond, etc.

- The pilot study request and DHEC approval for these aerators are provided in Appendix E.

Item 6: ASB Biomass Monitoring: EBS Advanced Microscopic and Chemical Analysis (Weekly)

Basic Description:

- ASB influent, ASB midpoint, and ASB outfall samples will be sent to EBS weekly for an advanced chemical and microbiological analysis that evaluates biomass health and related parameters.

Technical Rationale:

- These analyses will provide weekly trended data on parameters related to wastewater performance. This analysis will evaluate biomass health, biomass abundance, soluble BOD removal efficiency, and other parameters related to wastewater treatment performance.
    - The analysis will include:
        - *Microscopic Examination* – Protozoa/Metazoa abundance, floc formation, and dispersed bacteria abundance
        - *Flow Cytometry* – Analysis of percent live/dead bacterial cells in the sample
        - *Culturable Cell Counts*
        - *Total Cell Counts*
        - *Live Cell Counts*
        - *Basic chemical analysis*
            - *Soluble BOD*
            - NH_3*-N and* PO_4^{3-}*-P Concentrations*
            - *DOUR*
            - *TSS/VSS*

- New-Indy will measure the parameters as identified in the chart below and provide the results in the weekly update to DHEC.

Parameter	Target Range	Corrective Action
pH	ASB Mid and ASB Effluent: 6.5-8.5	Add acid/caustic to influent stream to mitigate pH swings
Soluble COD	Influent sCOD > 1500 mg/L	Add CN-9 to ASB Influent while loading is elevated
Dissolved Oxygen	Number of required operational aerators to be determined by the results of the IPT	Add CN-9 or peroxide to influent daily until aerators are repaired
Sulfide Concentration	Holding Pond Sulfide Concentration > 2 mg/L	Increase ferric chloride addition to ASB Effluent

Timeline:

- Weekly sample shipment began on June 24, 2021.

<u>Item 7: ASB Biomass Monitoring: Sentry Probe Installation</u>

Basic Description:

- EBS will install an in-line probe which will monitor biomass activity at the ASB Midpoint sample. *SENTRY: Bio-Electrode Technology* monitors biological activity by measuring electron transfer as the resident ASB biomass metabolizes soluble organic compounds. This data can be viewed at all times on the online SENTRY data page.

Technical Rational:

- The SENTRY unit consists of a metal screen that allows biological material to grow on the screen. As the biology consumes organic material, the electrons that normally would be accepted by oxygen/nitrate/sulfate enter an anode and are measured by the unit. This electron transfer will fluctuate based on how much soluble BOD is present at this point in the system. The electron transfer is measured as MET (microbial electron transfer) and is plotted out on the SENTRY data page. This data can also help alert New-Indy to potential inhibitory/toxic compounds moving through the system, as that will decrease oxygen uptake/electron transfer.

Timeline:

- EBS will install the Sentry Probe by mid-July 2021.

Item 8: Addressing No. 1 Holding Pond H_2S

Basic Description:

- The elevated loading of organic material from the ASB into the No. 1 holding pond during recommissioning activities and from the floating fiber condition appears to have contributed to the formation of temporary, elevated concentrations of H_2S in the unaerated, treated effluent holding pond. This soluble H_2S can volatilize in the pond and by aeration in the post-aeration basin. The addition of ferric chloride into the inlet to the No. 1 holding pond will react with the H_2S to form insoluble iron sulfide.

Technical Rational:

- The use of iron salts to control H_2S has been widely used in the wastewater collection and treatment industry. Ferric chloride reacts with hydrogen sulfide to form insoluble iron sulfide, which precipitates and settles reducing the concentration of H_2S that can be released to the atmosphere.

Timeline:

- A ferric chloride addition pilot study was approved on June 17, 2021 to address the temporary, elevated concentration of H_2S in the No. 1 holding pond. The DHEC letter of approval and pilot study request are provided in Appendix E.
- The pilot study was initiated on June 17, 2021 and is approved until October 31, 2021. During this study, New-Indy will regularly measure H_2S concentrations in the inlet to the No. 1 holding pond before and after the addition location, within the No. 1 holding pond, and at the outlet from the No. 1 holding pond to the post-aeration basin. The feed rate of ferric chloride may be adjusted as part of the study, and the study may be discontinued early if organic loading from the ASB return to pre-upset conditions and H_2S

concentrations in the No. 1 holding pond sufficiently reduce. The threshold level of concern concentration of H_2S in the No. 1 holding pond will also be evaluated during the pilot study.

- As a corrective action, the mill intends to evaluate flow patterns in the No. 1 holding pond. This pond is not intended to provide treatment and only serves as a retaining basin for managing the mill's hydrograph-controlled release NPDES permit that essentially regulates discharge flow based on river flow. Part of this evaluation will be to determine if improving flow patterns is necessary for the basin to serve its role, and if so, options for improving flow patterns within the basin. The surface movement of the pond is not indicative of the flow within the entire pond due to its depth. The flow in the No. 1 holding pond has been determined to not be a concern based on the observed flow rates into and out of the pond; therefore, no changes will be made to the flow pattern.

Item 9: Updating the Wastewater Treatment System Operations and Maintenance Manual

Basic Description:

- Part II.E.3 of the mill's NPDES permit requires an operations and maintenance (O&M) manual to be developed for the wastewater treatment system. The mill's O&M manual is currently under revision and will address DHEC's comments regarding the contents, specifically, "overall and detailed process flow descriptions, all influent into the waste treatment system and its characteristics, qualitative and quantitative conditions that represent a properly operated system, for each unit operation and as an overall system, qualitative and quantitative conditions that require corrective action; corrective actions to be taken and timeframes to complete corrective actions."

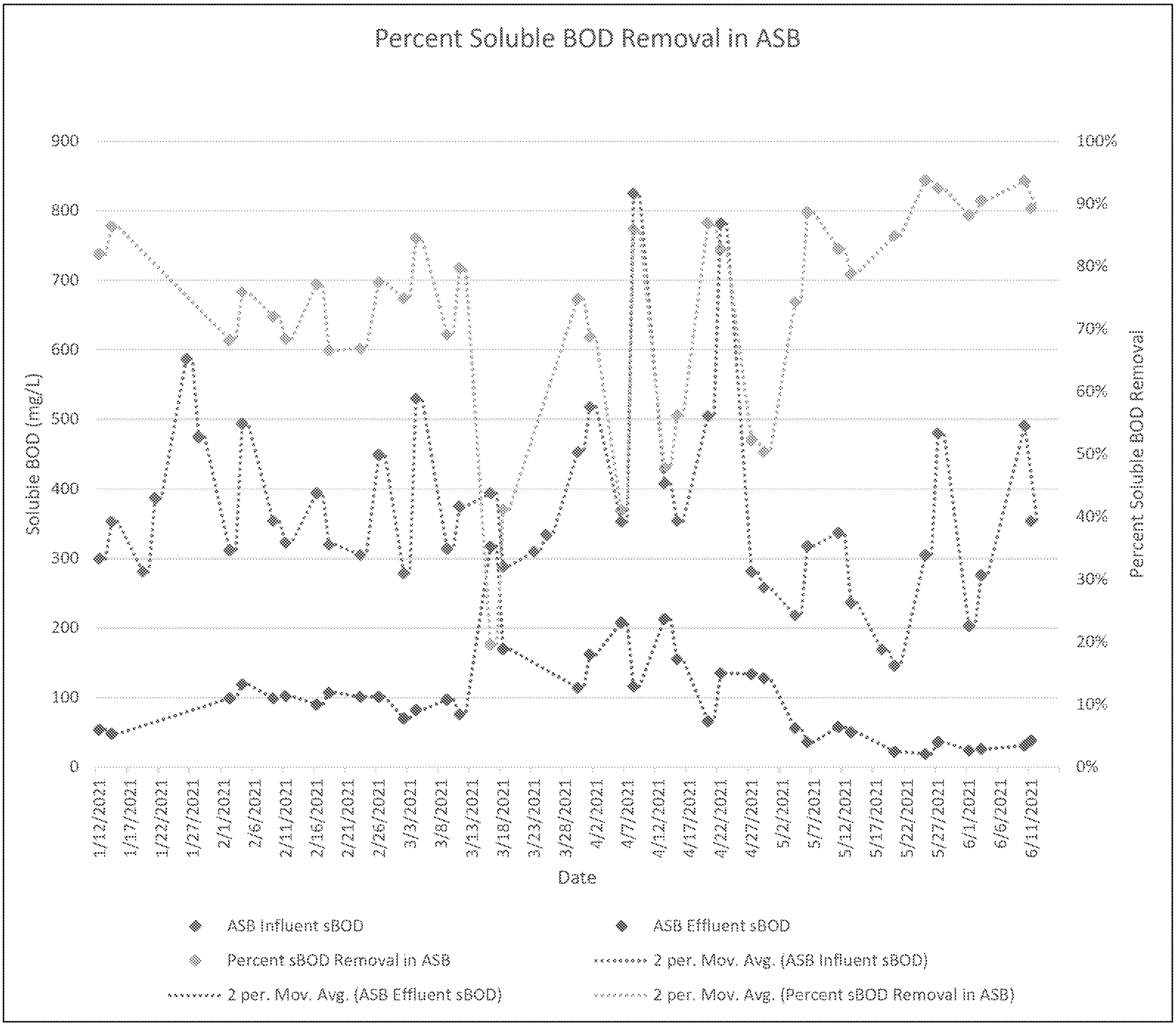
Technical Rational:

- An O&M manual's intent is to provide the wastewater operators the understanding, responsibilities, and reference materials necessary to operate the wastewater treatment system safely, efficiently, and in compliance with wastewater regulations and NPDES permit requirements. The O&M manual will be updated to include the successful corrective actions described herein, as it is important in providing wastewater operators and mill management with additional resources in responding to odor and solids related issues should they occur in the future.

Timeline:

- The O&M manual in under revision and includes a revised odor control plan and new overall appearance. The manual will be updated to include additional information on wastewater flow characteristics; operating conditions that may warrant odor-related responses; and the corrective action measures that prove successful in responding to odor-related issues.
- Some of the updates to the O&M manual can be incorporated over the next few weeks, while others require the performance of the corrective actions and pilot studies. The O&M manual is a living document that will be updated as the process and wastewater treatment system change and lessons are learned.

Figure 7-1
Percent Soluble BOD Removal in ASB Chart

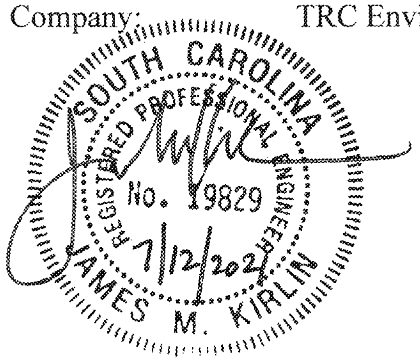


7.4 WASTEWATER PROFESSIONAL ENGINEERING CERTIFICATION

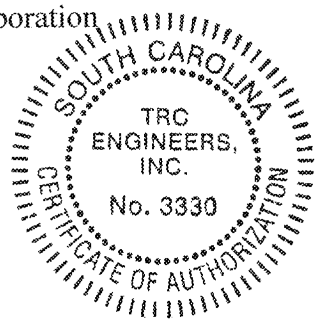
Name: James M. Kirlin, P.E.

S.C. Registration No. 19,829

Company: TRC Environmental Corporation



(Seal)



(TRC COA Seal)

Exhibit 4

From: Kler, Denis
To: Foley, Patrick; Fried, Gregory
Cc: Caballero, Kathryn; Pratt, Marirose; Dressler, Jason; Russo, Todd; Taylor, Kevin; Mills, Andrew
Subject: RE: New Indy steam stripper
Date: Monday, May 10, 2021 2:45:39 PM

Keeping everyone in the loop.

I got a call from Dan Mallett, New Indy, today at 1:21 pm. Dan stated that the steam stripper foul condensate flow rate averaged about 400 gallons/minute last week, and the foul condensate flow rate averaged about 197 gallons/minute to the ASB last week. I asked about the max foul condensate flow rate to the ASB and he said the max flow rate was about 300 gallons/minute to ASB. Dan stated that the max foul condensate flow rate to the AEB before the steam stripper restart was about 800-825 gallons/minute.

Dan also stated that the mill production is still struggling and the mill is still in the 180 startup period.

Dan mentioned that the even though the steam stripper has started operation, the mill and DHEC have still been receiving complaints, so we may want to be open to other potential sources of the emissions.

Denis B. Kler
U.S. EPA Region 4
Enforcement and Compliance Assurance Division
Policy, Oversight and Liaison Office
Phone: 404-562-9199

From: Kler, Denis
Sent: Wednesday, May 5, 2021 8:54 AM
To: Foley, Patrick <Foley.Patrick@epa.gov>; Fried, Gregory <Fried.Gregory@epa.gov>
Cc: Caballero, Kathryn <Caballero.Kathryn@epa.gov>; Pratt, Marirose <Pratt.Marirose@epa.gov>; Dressler, Jason <Dressler.Jason@epa.gov>; Russo, Todd <Russo.Todd@epa.gov>; Taylor, Kevin <Taylor.Kevin@epa.gov>; Mills, Andrew <mills.andrew@epa.gov>
Subject: RE: New Indy steam stripper

Pat,

One of the items in the steam stripper re-start table the company provided was the functionality of the incineration nozzles in the combination boilers. But I can double check that the SOGS are being incinerated in the one of the combination boilers.

According to my notes from the onsite evaluation on April 15, neither combination boiler #1 nor #2 have SO_2 CEMS. They only have opacity monitors. To follow up on the SO_2 question is that in the permit application dated April 24, 2020 (to shutdown the steam stripper and send all the foul condensate to the ASB), the company stated that there would be reductions in SO_2, NOX, VOC, CO, TRS and H_2S emissions from the combination boilers since they would no longer be incinerating the SOGs in the combination boilers. Now that the steam stripper is back online then those reductions are no longer there.

Moving forward, if they increase the steam stripper capacity to handle the additional foul condensate load, which will increase the amount of SOGs produced, then we would expect to see an increase in SO_2 and other pollutants from the combination boilers due the incineration of the additional SOGs.

Denis B. Kler
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Policy, Oversight and Liaison Office
Phone: 404-562-9199

From: Foley, Patrick <Foley.Patrick@epa.gov>
Sent: Wednesday, May 5, 2021 8:13 AM
To: Kler, Denis <Kler.Denis@epa.gov>; Fried, Gregory <Fried.Gregory@epa.gov>
Cc: Caballero, Kathryn <Caballero.Kathryn@epa.gov>; Pratt, Marirose <Pratt.Marirose@epa.gov>; Dressler, Jason <Dressler.Jason@epa.gov>; Russo, Todd <Russo.Todd@epa.gov>; Taylor, Kevin <Taylor.Kevin@epa.gov>; Mills, Andrew <mills.andrew@epa.gov>
Subject: RE: New Indy steam stripper

That sounds right to me as well. So after turning the stripper back on we still have almost 4x as much condensate going to the ASB as we did before the changes. They reduced the impacts but probably have not eliminated them.

Can you verify that incineration of TRS laden stripper off-gasses (SOG) is happening as expected in the boiler and identify which boiler is receiving them and whether it has an SO_2 CEMS?

I do think at some point we need to have another discussion with the company. Can we talk about whether we do that soon or wait until after the 303 Order goes out? These impacts may go on until they either reduce operating rate to match condensate production to stripper capacity or install additional stripper capacity. It may make sense to lead them by the nose to that conclusion. Long term, they will need additional stripper capacity especially if they want to increase throughput as their recent permit application stated.

From: Kler, Denis <Kler.Denis@epa.gov>
Sent: Wednesday, May 5, 2021 8:04 AM
To: Foley, Patrick <Foley.Patrick@epa.gov>; Fried, Gregory <Fried.Gregory@epa.gov>
Cc: Caballero, Kathryn <Caballero.Kathryn@epa.gov>; Pratt, Marirose <Pratt.Marirose@epa.gov>; Dressler, Jason <Dressler.Jason@epa.gov>; Russo, Todd <Russo.Todd@epa.gov>; Taylor, Kevin <Taylor.Kevin@epa.gov>; Mills, Andrew <mills.andrew@epa.gov>
Subject: RE: New Indy steam stripper

Pat I think we are on the same page here. During the opening meeting with the company on April 14, the company stated that as part of the conversion (from bleached to unbleached), the #1 evaporator train was modified to allow for higher black liquor throughput. I asked the company if they are running more black liquor through the evaporator train then are you producing more condensate, and they said yes. This seems to account for the increase in foul condensate being piped directly into the ASB (about 750-800 gallons/minute). It would also explain why the company had to install a larger diameter pipe from the foul condensate tank to the ASB (going from 90 gallons/minute to 750-800 gallons/minute). One question I have asked the company is now that the steam stripper is back in operation what is the flow rate of the foul condensate from the foul condensate tank directly to the ASB. The company responded to by saying they have to wait and see on the data. My guess is it will have to be about 370 gallons/minute (800 – 430).

Denis B. Kler
U.S. EPA Region 4
Enforcement and Compliance Assurance Division
Policy, Oversight and Liaison Office
Phone: 404-562-9199

From: Foley, Patrick <Foley.Patrick@epa.gov>
Sent: Tuesday, May 4, 2021 3:59 PM

To: Kler, Denis <Kler.Denis@epa.gov>; Fried, Gregory <Fried.Gregory@epa.gov>
Cc: Caballero, Kathryn <Caballero.Kathryn@epa.gov>; Pratt, Marirose <Pratt.Marirose@epa.gov>; Dressler, Jason <Dressler.Jason@epa.gov>; Russo, Todd <Russo.Todd@epa.gov>; Taylor, Kevin <Taylor.Kevin@epa.gov>; Mills, Andrew <mills.andrew@epa.gov>
Subject: RE: New Indy steam stripper

The way I read the email from Dan Mallet is that prior to the change, they were stripping 430/(430+90) = 82.7% of the foul condensate and after the change were stripping none of it. Put another way, using the current amount of foul condensate produced, they increased the amount of foul condensate hard-piped to the ASB by 800/90 = 778% or are now sending almost 800/90 = 9 times as much foul condensate to the ASB than they had previously. I think what Denis is saying they are now PRODUCING twice as much foul condensate as they previously produced.

Do you think what I wrote is right Denis? Its possible we are getting inconsistent descriptions of volumes and what is being counted as foul condensate and how it is getting to the ASB (hard-piped versus main flow to ASB).

From: Kler, Denis <Kler.Denis@epa.gov>
Sent: Tuesday, May 4, 2021 3:19 PM
To: Foley, Patrick <Foley.Patrick@epa.gov>; Fried, Gregory <Fried.Gregory@epa.gov>
Cc: Caballero, Kathryn <Caballero.Kathryn@epa.gov>; Pratt, Marirose <Pratt.Marirose@epa.gov>; Dressler, Jason <Dressler.Jason@epa.gov>; Russo, Todd <Russo.Todd@epa.gov>; Taylor, Kevin <Taylor.Kevin@epa.gov>; Mills, Andrew <mills.andrew@epa.gov>
Subject: FW: New Indy steam stripper

Now the mill is sending about 750-800 gallons/minute directly to the ASB (little less than double).

Denis B. Kler
U.S. EPA Region 4
Enforcement and Compliance Assurance Division
Policy, Oversight and Liaison Office
Phone: 404-562-9199

From: Dan Mallett <Dan.Mallett@new-indycb.com>
Sent: Tuesday, May 4, 2021 2:59 PM
To: Kler, Denis <Kler.Denis@epa.gov>
Cc: Pratt, Marirose <Pratt.Marirose@epa.gov>; Russo, Todd <Russo.Todd@epa.gov>; Dressler, Jason

<Dressler.Jason@epa.gov>; Mills, Andrew <mills.andrew@epa.gov>; Taylor, Kevin <Taylor.Kevin@epa.gov>; Pete Cleveland <pete.cleveland@new-indycb.com>
Subject: RE: New Indy steam stripper

Using a 12 month average prior from May 2019-May 2020, the average flow to the stripper was 430 gpm and the flow to the ASB through the hardpipe was 90 gpm.

DANIEL MALLETT
Environmental Manager
Office: (803) 981-8010
Mobile: (207) 951-6216

From: Kler, Denis [mailto:Kler.Denis@epa.gov]
Sent: Tuesday, May 4, 2021 11:53 AM
To: Dan Mallett <Dan.Mallett@new-indycb.com>
Cc: Pratt, Marirose <Pratt.Marirose@epa.gov>; Russo, Todd <Russo.Todd@epa.gov>; Dressler, Jason <Dressler.Jason@epa.gov>; Mills, Andrew <mills.andrew@epa.gov>; Taylor, Kevin <Taylor.Kevin@epa.gov>; Pete Cleveland <pete.cleveland@new-indycb.com>
Subject: New Indy steam stripper

Dan,
I hope you are having a good day. I had a follow up question about our conversation we had on Monday morning. It is my understanding and correct me if I am wrong, that prior to September 2020, all the foul condensate was collected in the steam stripper feed tank (foul condensate tank). From the steam stripper feed tank about 400 gallons/minute was sent to the steam stripper. What was the flow rate from the foul condensate tank to the aeration stabilization basin prior to September 2020?
Let me know if you have any questions.
Thanks,
Denis

Denis B. Kler
U.S. EPA Region 4
Enforcement and Compliance Assurance Division
Policy, Oversight and Liaison Office
Phone: 404-562-9199